

SAFETY COMPLIANCE TESTING FOR FMVSS 121

Air Brake Systems

**Vehicle: MY 2007 McNeilus 11-yd. Mixer, (8X4) Truck
McNeilus Truck and Manufacturing, Inc.**

Report #: 121V-TRC-06-011

NHTSA #: C70702

TRC Inc. Test #: 20040769/8000

Transportation Research Center Inc.

P. O. Box B-67

East Liberty, Ohio 43319-0367



April 2008

Final Report

U.S. Department of Transportation

National Highway Traffic Safety Administration

Enforcement

Office of Vehicle Safety Compliance

West Building, W43-503

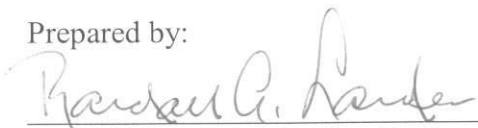
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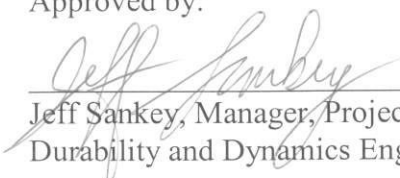
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16. ABSTRACT: Compliance tests were conducted on the subject 2007 McNeilus 11-Yd. Mixer (8X4) Truck, NHTSA No. C70702, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-121V-05, for the determination of FMVSS 121 compliance. Test failures identified were as follows: None			
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SECTION 1.0

Purpose of Compliance Test

Purpose

Transportation Research Center Inc. (TRC Inc.) conducted this program for the National Highway Traffic Safety Administration (NHTSA). The purpose of this test was to determine if the subject vehicle, a 2007 McNeilus 11-Yd. Mixer (8X4) truck, meets the performance requirements of FMVSS 121, "Air Brake Systems."

Test Procedure

This test was conducted in accordance with NHTSA's Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedure No. TP-121V-05. Data was obtained relative to FMVSS 121, "Air Brake Systems." Deviations from the procedure: the only tests performed under section 10.2 "Laboratory Tests" were 10.2 I. "Brake Actuation and Release Timing." Note that test 10.3 G "Parking Brake Chamber Application Pressure," though in a Road Test sequence, was performed at the time of the Brake Actuation and Release Timing. The test sequence was performed as follows:

1. Burnish
2. Brake Actuation and Release Timing/Parking Brake Chamber Appl. Press. GVWR
3. Service Brake Stops GVWR
4. Emergency Brake (Primary Reservoir Failure) Stops GVWR
5. Emergency Brake (Secondary Reservoir Failure) Stops GVWR
6. Emergency Brake (Primary Control Line Failure) Stops GVWR
7. Park Brake – Grade Holding
8. Stability and Control LLVW
9. Service Brake Stops LLVW
10. Emergency Brake (Primary Reservoir Failure)
11. Emergency Brake (Secondary Reservoir Failure)
12. Emergency Brake (Primary Control Line Failure)
13. Park Brake – Grade Holding
14. Final Inspection

The vehicle information is summarized in Section 2.0. The test data summary is located in Section 3.0, the test data is located in Section 4.0, and the instrumentation summary is located in Section 5.0. Appendix A contains the still photographic prints. Appendix B lists the test data in Report Generator format.

SECTION 2.0

Vehicle Information

Vehicle Information

The completed test vehicle is a 2007 McNeilus 11-Yd. Mixer (8X4) Truck (incomplete manufacturer is Sterling Truck Corporation) with a wheelbase of 235 inches, manufactured by McNeilus Truck and Manufacturing Corporation. The Gross Vehicle Weight Rating (GVWR) is 71,020 pounds and the test vehicle is equipped with a 4S/4M anti-lock brake system of unknown manufacture.

SECTION 3.0

Test Data Summary

Test Data Summary

Table 1

Summary of Data for Laboratory Test “Application & Release Times”

Average Times in Seconds	Application Max. Allowable – 0.45 sec.				Release Max. Allowable – 0.55 sec.			
	Axle #1	Axle #2	Axle #3	Axle #4	Axle #1	Axle #2	Axle #3	Axle #4
Full System Operating	0.337	0.361	0.362	0.248	0.369	0.440	0.442	0.483
ABS Main Power Failed	0.336	0.362	0.362	0.253	0.366	0.443	0.451	0.474
ABS Wheel Sensor Failed (Open)	0.343	0.361	0.362	0.255	0.368	0.443	0.445	0.475
ABS Wheel Sensor Failed (Short)	0.343	0.365	0.366	0.255	0.367	0.438	0.444	0.472

The nominal park brake chamber pressures were 0.1 psi, 3 seconds after control valve actuated.

Table 2

Data Summary of the Stopping Distances

Distance in Feet (Corrected Dist.)	GVWR		LLVW		Maximum Allowable
	Minimum	Maximum	Minimum	Maximum	(ft.)
1.2 Service Brakes	277.3	312.2	182.1	193.0	GVWR – 310 LLVW – 335
Failed Primary Reservoir	362.9	378.9	191.8	206.9	GVWR – 613 LLVW – 613
Failed Secondary Reservoir	325.3	353.8	246.8	230.0	GVWR – 613 LLVW – 613
Failed Primary Control Line	419.8	445.0	202.1	216.1	GVWR – 613 LLVW – 613

The vehicle passed the Stability and Control Tests.

SECTION 4.0

Test Data

**TEST DATA
TABLE 3
VEHICLE INFORMATION SHEET - FMVSS 121**

Vehicle: 2007 McNeilus 11-Yd. Mixer (8x4) Truck Veh. Number: C70702

Test No.: 20040769/8000 Test Date(s): 02/15/08 to 04/17/08

Test Facility/Location: TRC/Transportation Research Center Inc., East Liberty, Ohio

Truck/Tractor Year, Make, and Model: 2007 McNeilus 11-Yd. Mixer, 8X4, Truck

Build Date: 03/2006 VIN: 2FZHAWDA77AZ40474

Body (Serial) No.: 79130 Chassis No.: No Data

GVWR: 71,020 lbs. GAWRs: 20,000 lbs. – Steer; 20,000 lbs. – Drives; 11,020 lbs. - Tag

Engine Data: Type: (Diesel, gas, other) Diesel (Turbo)
6 Cylinders (Inline) Cu. In. Liter 335 HP

Transmission: 10 Speed X Manual Automatic O.D.

Axle Drive Configuration: 8X4 Center of Gravity (in): NA

Initial Odometer: 19,916 mi.

Wheelbase: Truck, (in): 235 Control Trailer, (in): NA

Retarder(s) Type(s): None Aerodynamic Treatments: Yes No X

BRAKES:

	Type ¹	Size	Make	Lining (Edge Code)
Axles:				
Steer #1	<u>Cam</u>	<u>16.5 x 6 in.</u>	<u>Meritor</u>	<u>R403 GG</u>
Drive #2	<u>Cam</u>	<u>16.5 x 7 in.</u>	<u>Meritor</u>	<u>R301 FF</u>
Drive #3	<u>Cam</u>	<u>16.5 x 7 in.</u>	<u>Meritor</u>	<u>R301 FF</u>
Tag #4	<u>Cam</u>	<u>15 x 4 in.</u>	<u>Meritor</u>	<u>MA210 FF</u>

¹ Cam, disc, wedge, etc.

....Continued

BRAKE DRUM/ROTOR:

	Type ²	Make	Dust Shields Installed?
Axles:			
Steer #1	<u>Cast Drum</u>	<u>Conmet</u>	<u>Yes</u>
Drive #2	<u>Cast Drum</u>	<u>Conmet</u>	<u>Yes</u>
Drive #3	<u>Cast Drum</u>	<u>Conmet</u>	<u>Yes</u>
Tag #4	<u>Cast Drum</u>	<u>KIC</u>	<u>Yes</u>

² Cast or composite drum, vented or non-vented rotor, etc.

ACTUATION DETAILS:

AIR CHAMBERS		SLACK ADJUSTERS			
			Length or		
	Make	Type ³	Wedge angle	Mfr.	Cam Rotation ⁴
Axles:					
Steer #1	<u>Haldex</u>	<u>24</u>	<u>5.5 in.</u>	<u>ArvinMeritor</u>	<u>Same</u>
Drive #2	<u>Haldex</u>	<u>30/30</u>	<u>5.5 in.</u>	<u>Gunit</u>	<u>Same</u>
Drive #3	<u>Haldex</u>	<u>30/30</u>	<u>5.5 in.</u>	<u>Gunit</u>	<u>Opposite</u>
Tag #4	<u>Haldex</u>	<u>16</u>	<u>5.5 in.</u>	<u>ArvinMeritor</u>	<u>Same</u>

³ Size and diaphragm or piston

⁴ Same or opposite to forward wheel rotation

TIRES

	Pressure (psi)	Size	Make	Model	Static Loaded Radius Measured	Databook (Website)
Axles:						
Steer #1	<u>120 psi</u>	<u>425/65R22.5</u>	<u>Michelin</u>	<u>XZY3</u>	<u>NA</u>	<u>20.6 in.</u>
Drive #2	<u>105 psi</u>	<u>11R22.5</u>	<u>Michelin</u>	<u>XDE M/S</u>	<u>NA</u>	<u>19.4 in.</u>
Drive #3	<u>105 psi</u>	<u>11R22.5</u>	<u>Michelin</u>	<u>XDE M/S</u>	<u>NA</u>	<u>19.4 in.</u>
Tag #4	<u>115 psi</u>	<u>11R22.5</u>	<u>Yokohama</u>	<u>RY023</u>	<u>NA</u>	<u>17.1 in.</u>

REMARKS: There were dual tires at each wheel end on the rear drive axles, only.

....Continued

ABS:

Mfr: No Data

Model: No Data

Configuration: 4S/4M

FRONT SUSPENSION:

Type: Solid Axle/Leaf Spring

Make: No Data

Model: No Data

REAR (DRIVES) SUSPENSION:

Type: Walking Beam/Trunion/Leaf

Make: No Data

Model: No Data

TAG SUSPENSION:

Type: Solid Axle/Air Bag

Make: No Data

Model: No Data

Rear Axle Spread, (in): 55 in.

Overall Width (SAE J693): 101.0 in.

FIFTH WHEEL:

Fifth Wheel Height Relative to Ground (in): NA
⁵Relative to rear axle(s) centerline.

Fifth Wheel Position, (in)⁵: NA
Load CG – Control Trailer (in.): NA

AIR SYSTEM:

Compressor Capacity (cfm): No Data

Cut-out (psi): No Data

Cut-in (psi): No Data

Crack Pressure Ratings (psi)⁵:

1st Axle: No Data 2nd Axle: No Data Treadle Valve⁶: No Data

⁵ Relative to rear axle(s) centerline (include sketch if necessary)

⁶ Total crack pressures between treadle valve and brake chambers

Front Axle Limiting: No Data

Air Dryer: Bendix

Air Compounding: No Data

Number of Brakes Controlled: Six brake positions ABS controlled, (4S/4M).

....Continued

AIR TANK VOLUMES. (cu. in.):

Supply: No Data Primary: No Data Secondary: No Data
Auxiliary: No Data Isolated From Service? No Data

Note: None.

SPECIAL CONDITIONS:

To simulate a common load, the vehicle's "barrel" was filled with a sand and water mixture. Per the owner's instructions, the barrel was rotating whenever the vehicle was in motion. At GVWR conditions, the rear-mounted tag axle pressure regulator was set at 54 psi. Additionally, for LLVW tests, the tag axle was lifted.

WEIGHTS (lbs):

	Empty	LLVW	Burnish	GVWR	GAWR
Axle:					
Steer #1	<u>9,600</u>	<u>9,900</u>	<u>20,480</u>	<u>20,480</u>	<u>20,000</u>
Drive #2	<u>NA</u>	<u>7,620</u>	<u>20,470</u>	<u>20,470</u>	<u>20,000</u>
Drive #3 (#2+#3)=	<u>15,520</u>	<u>8,140</u>	<u>21,670</u>	<u>21,670</u>	<u>20,000</u>
Tag #4	<u>NA</u>	<u>NA</u>	<u>6,850</u>	<u>6,850</u>	<u>11,020</u>
Total:	<u>25,120</u>	<u>25,660</u>	<u>69,470</u>	<u>69,470</u>	<u>71,020</u>

REMARKS:

Placard GVWR: 71,020 lbs.

Location of tag axle and placement and manner of ballasting, did not allow for precise distribution among the axles.

**TEST DATA
TABLE 4
VERIFICATION OF REQUIRED EQUIPMENT**

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck

Veh. No.: C70702

Date: 03-20-08 Driver: R. Heberling Technician: R. Landes Odometer: 19,970 mi.

SERVICE BRAKES

YES

NO

All Wheels Equipped with Brakes

X

All Brakes Equipped with Automatic Brake Adjusters

X

Brake Adjustment Indicators are visible from a location adjacent to or beneath the vehicle

X

ANTILOCK BRAKE SYSTEM

Antilock System Installed

X

Proper axle control

X

Comments: None

Antilock Warning Signal within Drivers Field-of-View
Amber letters, black background, no audible warning

X

SERVICE RESERVOIRS

No. of Reservoirs 3

Automatic Condensate drain valve(s) or supply reservoir

X

Automatic Operation of condensate drain valve

X

Each Reservoir has a Drain Valve which can be manually operated

X

PARKING BRAKES

Parking Brake Control Separate from Service Brake Control

X

Parking Brake Control Accessible from Operator's Seat

X

Parking Brake control is identified in a manner that specifies its operation

X

Parking Brake Control Operates Parking Brakes of Towed Vehicle

X N/A

___ Yes

___ No

REMARKS: None.

LABORATORY TESTS
TABLE 5
BRAKE ACTUATION AND RELEASE TIMES

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck

Veh. Number: C70702

Date: 03-25-08

Driver: NA

Technician: R. Landes

FULL SYSTEM - ABS MAIN POWER ACTIVE								
Run No.	Right Steer #1		Right Drive #2		Right Drive #3		Right Tag #4	
	Apply (sec)	Release (sec)	Apply (sec)	Release (sec)	Apply (sec)	Release (sec)	Apply (sec)	Release (sec)
1	0.335	0.365	0.365	0.444	0.366	0.446	0.246	0.489
2	0.336	0.374	0.349	0.443	0.350	0.435	0.248	0.483
3	0.339	0.367	0.370	0.443	0.370	0.447	0.250	0.478
Avg.	0.337	0.369	0.361	0.440	0.362	0.442	0.248	0.483
FULL SYSTEM - ABS MAIN POWER FAILED								
1	0.336	0.363	0.372	0.440	0.372	0.442	0.259	0.470
2	0.333	0.367	0.359	0.442	0.360	0.450	0.248	0.482
3	0.339	0.368	0.355	0.448	0.355	0.460	0.253	0.470
Avg.	0.336	0.366	0.362	0.443	0.362	0.451	0.253	0.474
ABS - WHEEL SENSOR FAILED – OPEN								
1	0.346	0.372	0.361	0.445	0.362	0.448	0.260	0.446
2	0.340	0.367	0.360	0.443	0.360	0.442	0.252	0.485
3	0.342	0.363	0.363	0.441	0.364	0.446	0.254	0.475
Avg.	0.343	0.368	0.361	0.443	0.362	0.445	0.255	0.475
ABS – WHEEL SENSOR FAILED – SHORT								
1	0.345	0.370	0.359	0.441	0.360	0.446	0.257	0.470
2	0.340	0.364	0.365	0.434	0.365	0.440	0.251	0.467
3	0.344	0.368	0.370	0.440	0.372	0.445	0.257	0.479
Avg.	0.343	0.367	0.365	0.438	0.366	0.444	0.255	0.472

REMARKS: To simulate the "Open" failure and immediately adjacent to the wheel, the left front/steer (axle #1) wheel speed sensor lead was disconnected. To simulate the "Shorted" failure and immediately adjacent to the wheel, the left front/steer (axle #1) wheel speed sensor connector was disconnected and the two receptacle wire ends to the ABS ECU were connected with a wire. For the ABS Active Tests, the ignition was in the ON/RUN position with the engine not running. For the ABS Main Power Failed Tests, the ignition was in the OFF position. All tests were performed with the vehicle attached to "shop" air and regulated to approximately 100 psi.

ROAD TESTS
TABLE 6
PARKING BRAKE CHAMBER APPLICATION PRESSURE

PARKING BRAKE TEST

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck

Vehicle Number: C70702

Test Performed By: R. Landes

Date: 03-25-08

PARKING BRAKE CHAMBER APPLICATION PRESSURE

AXLE # 2

RUN NUMBER	PRESSURE IN INTERMEDIATE PARKING CHAMBER AFTER 3 SECONDS (PSI)	
	LEFT	RIGHT
1	0.04	0.04
2	0.05	0.12
3	0.01	0.09
AVERAGE	0.03	0.08

AXLE # 3

RUN NUMBER	PRESSURE IN REAR PARKING CHAMBER AFTER 3 SECONDS (PSI)	
	LEFT	RIGHT
1	0.04	0.12
2	0.12	0.05
3	0.09	0.06
AVERAGE	0.08	0.08

If average pressure is less than or equal to 3 psi, use 0 psi

REMARKS: Average time to reach 3 psi – 1.5 sec. for #2 and #3 axles. Parking brake chambers only both drive axles.

Note: Tables 7 through 9 are for tests not performed by the laboratory and are, therefore, not included.

ROAD TESTS
TABLE 10
BURNISH

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck

Vehicle Number: C70702

8.1 BURNISH TEST WEIGHTS:

STEER AXLE: 20,000 lbs. DRIVE AXLES: 40,000 lbs. TAG AXLE: 11,020 lbs.

Driver No.	Date	Odometer Start	Odometer End
1	03/20/08	19,970	20,226
1	03/21/08	20,229	20,488

	Date	Time	Odometer
Test Start	03/20/08	10:00	19,970
Test Finish	03/21/08	16:00	20,488

ADJUSTMENT LEVELS								
	1L	1R	2L	2R	3L	3R	4L	4R
Initial	9/16 in.	9/16 in.	9/16 in.	9/16 in.	9/16 in.	9/16 in.	9/16 in.	9/16 in.
1st	1/2 in.	1/2 in.	1/2 in.	3/8 in.	1/2 in.	1/4 in.	9/16 in.	9/16 in.
2nd	1/2 in.	1/2 in.	7/16 in.	5/16 in.	7/16 in.	1/4 in.	9/16 in.	9/16 in.
3rd	1/2 in.	1/2 in.	1/4 in.	1/4 in.	1/4 in.	1/4 in.	9/16 in.	9/16 in.
Final	1/2 in.	1/2 in.	1/4 in.	1/4 in.	1/4 in.	1/4 in.	9/16 in.	9/16 in.

REMARKS: "Freestroke" measurement values were checked and *if* required, adjusted to 9/16 in. at the required intervals and at brake temperatures below 200 degrees F.

All initial Burnish adjustment clearances were set at 9/16 in.

All post-burnish adjustments set to 9/16 in freestroke.

Driver #1 – Richard Heberling.

....Continued...Visual Data

Snub #	Initial Speed (mph)	Avg. Cntrl. Press. (psi)	Avg. Decel (ft/s ²)	Initial Brake Temperatures °F											
				1L	1R	2L	2R	3L	3R	4L	4R				
1	40.3	56	9.5	80	84	48	82	81	80	85	78				
25	40.0	54	11.0	297	291	100	398	396	387	207	194				
50	39.9	43	10.7	318	283	381	416	523	486	316	292				
75	39.9	36	10.8	318	278	441	436	587	530	301	276				
100	40.1	34	11.4	309	262	429	416	555	500	266	242				
125	40.4	33	10.1	292	244	424	433	554	519	270	246				
150	40.0	46	10.8	308	266	392	416	491	476	273	241				
175	41.1	40	10.8	295	288	447	465	558	539	284	251				
200	39.7	34	10.5	307	272	472	484	568	553	290	259				
225	40.5	39	10.2	295	264	485	486	553	547	282	250				
250	39.8	43	10.8	332	269	496	516	572	567	301	273				
275	39.9	44	10.1	288	235	390	418	452	442	278	263				
300	39.6	42	10.7	298	243	458	491	543	540	297	280				
325	39.8	37	10.1	297	240	480	498	542	543	286	267				
350	40.3	40	10.1	313	280	482	511	555	557	296	276				
375	39.8	39	10.5	302	254	493	527	566	571	297	274				
400	39.7	42	10.0	271	243	437	470	516	507	287	261				
425	39.6	39	9.9	294	237	472	514	544	544	290	270				
450	39.5	35	10.6	331	292	502	544	571	569	305	285				
475	40.3	36	10.7	294	287	500	546	574	571	306	285				
500	40.2	31	10.3	292	244	487	515	541	538	279	251				

(Table continued on next page)

REMARKS: #1 = steer axle; #2 = intermediate drive axle; #3 = rear drive axle; #4 = rear mounted, liftable tag axle.

....Continued

Snub #	Initial Target Speed mph	Ambient Temp °F	Comments	Driver Initials	Time
1	40	34	Initiate.	RH	10:00
25	40	36		RH	
50	40	38		RH	
75	40	39		RH	
100	40	40		RH	
125	40	42	Check Adjustment.	RH	14:00
150	40	43		RH	
175	40	44		RH	
200	40	44		RH	
225	40	44		RH	
250	40	44	End Shift & Chk. Adjustment.	RH	18:40
275	40	30	Begin Shift.	RH	07:40
300	40	31		RH	
325	40	31		RH	
350	40	32		RH	
375	40	33	Check Adjustment.	RH	11:20
400	40	37		RH	
425	40	38		RH	
450	40	39		RH	
475	40	42		RH	
500	40	44	End Shift, Burnish Completed, Adjustment Check and Adjust.	RH	15:55

REMARKS: Data Sheet 11 not applicable to this test, therefore not included.

DATA SHEET 12
SERVICE BRAKE STOPPING TEST @ GVWR

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck

TRC Vehicle No.: C70702

Initial/End Odo.: 20,515 / 20,536

Date: 03/26/08 Driver: R. Heberling

Tech./Video: R. Landes

Project/Segment Nos.: 20040769/8000

Time: 13:25 – 15:30

Ambient Temperature: 32° to 100°F.

IBTs: 150° to 200°F.

Requirements: Air system fully charged before each stop.

With ABS - fully apply service brake; without - driver modulates control.

Perform stops in neutral or with clutch depressed.

One of the six stops MUST be equal or less than the requirement distance.

Manual brake adjustments permitted prior to performing stops.

Brake Stroke Measurements @ 85 psi (in) "Free" Stroke Measurements (in.)

Axle 1 Left/Right 1 9/16 / 1 1/2 Axle 1 Left/Right 9/16 / 9/16

Axle 2 Left/Right 1 5/8 / 1 5/8 Axle 2 Left/Right 9/16 / 9/16

Axle 3 Left/Right 1 9/16 / 1 9/16 Axle 3 Left/Right 9/16 / 9/16

Axle 4 Left/Right 1 1/4 / 1 1/2 Axle 4 Left/Right 9/16 / 9/16

Dist. Req. (ft.) @ 60: GVW&LLVW Bus: 280; GVW Truck: 310; LLVW Truck & Tractor: 335; GVWR Tractor: 355.

60 MPH SERVICE BRAKE STOPS - GVWR

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12 foot Lane?	Wheel Lock-up Indication Position, Spd. (mph), Time or length locked.	Comments
1	116.3	60.9	288.3	279.8	Yes	L&R Tag @ 58 to end.	Video Tape
2	117.5	60.7	283.7	277.3	Yes	L&R Tag @ 58 to end.	Video Tape
3	109.0	59.8	310.4	312.2	Yes	L&R Tag @ 58 to end.	None
4	114.0	60.5	304.7	299.4	Yes	L&R Tag @ 58 to end.	None
5	109.6	60.4	295.1	290.8	Yes	L&R Tag @ 58 to end.	None
*6	117.9	20.5	33.6	32.0	Yes	L&R Tag @ 19 to end.	Video Tape

Ambient Temp.: 53°F Wind Speed/Dir.: 9 mph, 261°W

Comments: *Not required – indicant test, only.

DATA SHEET 13
EMERGENCY BRAKE STOPPING TEST
PRIMARY RESERVOIR FAILURE @ GVWR

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck

TRC Vehicle No.: C70702 Initial/End Odo.: 20,552 / 20,582

Date: 03/28/08 Driver: R. Heberling Tech./Video: R. Landes

Project/Segment Nos.: 20040769/8000 Time: 14:05 – 16:1565.2

Ambient Temperature: 32° to 100°F.

IBTs: 150° to 200°F.

Requirements: Air system fully charged before each stop.

With ABS - fully apply service brake; without - driver modulates control.

Perform stops in neutral or with clutch depressed.

One of the six stops MUST be equal or less than the requirement distance.

Engage service brake between three and five seconds *after* warning displayed.

Dist. Req. (ft.) @ 60 mph: All Vehicles EXCEPT Tractors: 613; Unloaded Tractors: 720.

60 MPH EMERGENCY BRAKE STOPS - GVWR (Primary Reservoir)

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12 foot Lane?	Wheel Lock-up Indication Position, Spd. (mph), Time or length locked.	Comments
1	65.2	58.6	348.6	365.0	Yes	LT @ 55, RT @ 43, both to end	Video Tape
2	59.2	60.5	385.5	378.9	Yes	LT @ 55, RT @ 43, both to end	Video Tape
3	56.4	60.2	365.7	362.9	Yes	LT @ 55, RT @ 40, both to end	None
4	55.4	59.9	362.4	363.4	Yes	LT @ 47, RT @ 37, both to end	None
5	58.3	60.7	372.0	363.3	Yes	LT @ 53, RT @ 44, both to end	None
*6	56.0	20.1	42.4	42.1	Yes	L&R Tag @ 19 to end.	Video Tape

Ambient Temp.: 37°F Wind Speed/Dir.: 9 mph, 329°NW

Comments: *Not required – indicant test, only. LT = Left Tag; RT = Right Tag.

DATA SHEET 14
EMERGENCY BRAKE STOPPING TEST
SECONDARY RESERVOIR FAILURE @ GVWR

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck

TRC Vehicle No.: C70702 Initial/End Odo.: 20,597 / 20,621

Date: 04/02/08 Driver: R. Heberling Tech./Video: R. Landes

Project/Segment Nos.: 20040769/8000 Time: 8:45 - 10:50

Ambient Temperature: 32° to 100°F.

IBTs: 150° to 200°F.

Requirements: Air system fully charged before each stop.

With ABS - fully apply service brake; without - driver modulates control.

Perform stops in neutral or with clutch depressed.

One of the six stops MUST be equal or less than the requirement distance.

Engage service brake between three and five seconds *after* warning displayed.

Dist. Req. (ft.) @ 60 mph: All Vehicles EXCEPT Tractors: 613; Unloaded Tractors: 720.

60 MPH EMERGENCY BRAKE STOPS - GVWR (Secondary Reservoir)

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12-foot Lane?	Wheel Lock-up Indication Position, Spd. (mph), Time or length locked.	Comments
1	97.6	59.9	352.2	353.5	Yes	LT @ 52, RT @ 48, both to end	Video Tape
2	102.4	59.9	352.2	353.8	Yes	LT @ 53, **both tags to end.	Video Tape
3	104.3	60.2	327.1	325.3	Yes	LT @ 54, **both tags to end.	None
4	102.8	59.1	324.9	335.3	Yes	LT @ 53, **both tags to end.	None
5	102.8	61.3	340.4	326.3	Yes	LT @ 50, **both tags to end.	None
6*	102.2	19.3	39.8	42.7	Yes	NO	Video Tape

Ambient Temp.: 35°F Wind Speed/Dir.: 7 mph, 67°NE

Comments: *Not required – indicant test, only. **Right tag wheel tach failed – no data. Right tag did lock to end of stop from visual observation and videography.

DATA SHEET 15
EMERGENCY BRAKE STOPPING TEST
PRIMARY CONTROL LINE FAILURE @ GVWR

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck

TRC Vehicle No.: C70702 Initial/End Odo.: 20,624 / 20,647

Dates: 04/02/08 Driver: R. Heberling Tech./Video: R. Landes

Project/Segment Nos.: 20040769/8000 Times: 12:15 - 14:35

Ambient Temperature: 32° to 100°F.

IBTs: 150° to 200°F.

Requirements: Air system fully charged before each stop.

With ABS - fully apply service brake; without - driver modulates control.

Perform stops in neutral or with clutch depressed.

One of the six stops MUST be equal or less than the requirement distance.

Engage service brake any time after opening solenoid.

Dist. Req. (ft.) @ 60 mph: All Vehicles EXCEPT Tractors: 613; Unloaded Tractors: 720.

60 MPH EMERGENCY BRAKE STOPS - GVWR (Primary Control Line)

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12-foot Lane?	Wheel Lock-up Indication Position, Spd. (mph), Time or length locked.	Comments
1	100.9	60.4	451.5	445.0	Yes	LT @ 58, **both tags to end.	Video Tape
2	103.0	59.7	423.8	427.6	Yes	LT @ 58, **both tags to end.	Video Tape
3	102.7	59.7	419.4	430.7	Yes	***Both tags to end.	None
4	98.0	59.6	413.6	419.8	Yes	***Both tags to end.	None
5	101.1	60.1	428.7	426.6	Yes	***Both tags to end.	None
*6	99.7	19.6	48.4	50.4	Yes	***L&R Tag beginning to end.	Video Tape

Ambient Temp.: 42°F Wind Speed/Dir.: 6 mph, 360°N

Comments: *Not required – indicant test, only. **Right tag wheel tack failed – no data. Right tag did lock to end of stop from visual observation and videography. ***Left tag wheel tack failed – no data. Both tag axles locked to the end of stop from visual observation and videography.

DATA SHEET 16
PARK BRAKE TEST
20% GRADE HOLDING - GVWR

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck

TRC Vehicle No.: C70702 Initial/End Odo.: 20,650

Date: 04/02/08 Driver: R. Heberling Tech./Video: S. Wagoner/R. Landes

Project/Segment Nos.: 20040769/8000 Time: 15:00

Ambient Temperature: 32° to 100°F.

IBT's: 150° to 200°F.

Parking Brake Chamber(s) Pressure: 0 psi

20% GRADE HOLDING - GVWR

<u>X</u> GVWR ___ LLVW	Initial Brake Temperature(s) (°F)	Control Pressure to Hold Vehicle (psi)	Movement to Become Stationary on Grade (inches)	Stationary on Grade For 5 minutes	
	Hottest Brake			Yes	No
Up Grade*	198	56	Approx. 1 in.	X	
Down Grade	182	45	0	X	

Ambient Temp.: 44°F

Wind Speed: 4 mph

Direction: 33°N

REMARKS: *Performed the Up Grade Test three times and passed during the third attempt. The vehicle initially moved approximately three-quarters of an inch, immediately after the service brake was released, then "creeped" several times during the Up Grade Test's first minute for an approximate total of a quarter of an inch. After the first minute, the vehicle remained stationary. Due to the potential of material spilling from the barrel, the downgrade test was performed first. No material was spilled.

The test vehicle held for five minutes in both the upgrade and downgrade orientations. Both directions were video taped.

**ROAD TESTS
DATA SHEET 17
STABILITY & CONTROL @ LLVW**

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck

Veh. No.: C70702

Initial/End Odo.: 20,668 / 20,671

Date: 04/03/08 Driver: R. Heberling Observer/Video: R. Landes

Project/Segment Nos.: 20040769/8000 Time: 10:30 - 11:05

Manually Controlled Retarder: NA

Maximum Drive Through Speed 32.0 mph

75% of Max Drive Through Speed 24.0 mph

STABILITY & CONTROL - LLVW

Stop No.	Initial Speed (mph)	*Apply Time (sec)	Approx. Dist. Out of Lane (ft)	Number Markers Hit	Comments
1	24.4	0.142	0	0	Video Tape
2	24.1	0.113	0	0	Video Tape
3	24.7	0.199	0	0	Video Tape
4	23.3	0.134	0	0	Video Tape

Ambient Temp.: 41 °F

Wind Speed: 4 mph

Direction: 100 °E

REMARKS: The vehicle remained in the lane during all required stops.
For stops #1 & #3, the right intermediate drive axle locked at 24 mph and 22 mph, respectively.

*See Appendix C.

DATA SHEET 18
SERVICE BRAKE STOPPING TEST @ LLVW

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck

TRC Vehicle No.: C70702

Initial/End Odo.: 20,671 / 20,689

Date: 04/03/08 Driver: R.Heberling Tech./Video: R. Landes

Project/Segment Nos.: 20040769/8000 Time: 11:25 - 12:00

Ambient Temperature: 32° to 100°F.

IBTs: 150° to 200°F.

Requirements: Air system fully charged before each stop.

With ABS - fully apply service brake; without - driver modulates control.

Perform stops in neutral or with clutch depressed.

One of the six stops MUST be equal or less than the requirement distance.

Manual brake adjustments permitted prior to performing stops.

Brake Stroke Measurements @ 85 psi (in) "Free" Stroke Measurements (in.)

Axle 1 Left/Right NA / NA Axle 1 Left/Right 9/16 / 9/16

Axle 2 Left/Right NA / NA Axle 2 Left/Right 9/16 / 9/16

Axle 3 Left/Right NA / NA Axle 2 Left/Right 9/16 / 9/16

Axle 4 Left/Right NA / NA Axle 2 Left/Right 9/16 / 9/16

Dist. Req. (ft.) @ 60: GVW&LLVW Bus: 280; GVW Truck: 310; LLVW Truck & Tractor: 335; GVWR Tractor: 355.

60 MPH SERVICE BRAKE STOPS - LLVW

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12 foot Lane?	Wheel Lock-up Indication Position, Spd. (mph), Time, or length locked.	Comments
1	113.5	59.6	186.1	188.8	Yes	No	Video Tape
2	116.6	60.6	193.3	189.7	Yes	RI @ 32 to end.	Video Tape
3	115.2	60.4	195.7	193.0	Yes	No	None
4	117.7	61.1	188.8	182.1	Yes	No	None
5	117.2	59.2	186.8	192.0	Yes	No	None
*6	117.7	20.2	28.1	27.4	Yes	No	Video Tape

Ambient Temp.: 44°F Wind Speed/Dir.: 6 mph, 107°E

Comments: *Not required – indicant test, only.

Freestrokes were adjusted to 9/16 in. prior to performing service brake stops.

DATA SHEET 19
EMERGENCY BRAKE STOPPING TEST
PRIMARY RESERVOIR FAILURE @ LLVW

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck

TRC Vehicle No.: C70702 Initial/End Odo.: 20,689 / 20,709

Date: 04/03/08 Driver: R. Heberling Tech./Video: R. Landes

Project/Segment Nos.: 20040769/8000 Time: 12:05 – 12:35

Ambient Temperature: 32° to 100°F.

IBTs: 150° to 200°F.

Requirements: Air system fully charged before each stop.

With ABS - fully apply service brake; without - driver modulates control.

Perform stops in neutral or with clutch depressed.

One of the six stops MUST be equal or less than the requirement distance.

Engage service brake between three and five seconds *after* warning displayed.

Dist. Req. (ft.) @ 60 mph: All Vehicles EXCEPT Tractors: 613; Unloaded Tractors: 720.

60 MPH EMERGENCY BRAKE STOPS - LLVW (Primary Reservoir)

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12 foot Lane?	Wheel Lock-up Indication Position, Spd. (mph), Time or length locked.	Comments
1	57.7	58.4	190.4	200.9	Yes	RI @ 30, LR @ 29, both to end.	Video Tape
2	61.2	59.5	203.3	206.9	Yes	RI @ 25 to end.	Video Tape
3	58.4	59.4	188.2	191.8	Yes	RI @ 30, LR @ 24, both to end.	None
4	56.6	60.1	202.3	201.7	Yes	Ri @ 35, LR @ 25, both to end.	None
5	58.6	59.6	194.0	196.4	Yes	RI @ 25 to end.	None
*6	56.3	20.1	26.7	26.4	Yes	NO	Video Tape

Ambient Temp.: 46°F Wind Speed/Dir.: 9 mph, 132°SE

Comments: *Not required – indicant test, only.

DATA SHEET 20
EMERGENCY BRAKE STOPPING TEST
SECONDARY RESERVOIR FAILURE @ LLVW

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck
 TRC Vehicle No.: C70702 Initial/End Odo.: 20,709 / 20,728
 Date: 04/03/08 Driver: R. Heberling Tech./Video: R. Landes
 Project/Segment Nos.: 20040769/8000 Time: 12:45 – 13:20

Ambient Temperature: 32° to 100°F.

IBTs: 150° to 200°F.

Requirements: Air system fully charged before each stop.

With ABS - fully apply service brake; without - driver modulates control.

Perform stops in neutral or with clutch depressed.

One of the six stops MUST be equal or less than the requirement distance.

Engage service brake between three and five seconds *after* warning displayed.

Dist. Req. (ft.) @ 60 mph: All Vehicles EXCEPT Tractors: 613; Unloaded Tractors: 720.

60 MPH EMERGENCY BRAKE STOPS - LLVW (Secondary Reservoir)

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12-foot Lane?	Wheel Lock-up Indication Position, Spd. (mph), Time or length locked.	Comments
1	97.0	59.1	233.4	240.5	Yes	NO	Video Tape
2	95.5	59.9	245.6	246.8	Yes	NO	Video Tape
3	100.5	60.1	239.0	238.2	Yes	NO	None
4	103.0	59.9	238.7	239.7	Yes	NO	None
5	102.9	61.3	240.2	230.0	Yes	NO	None
6*	102.1	19.7	30.5	31.8	Yes	NO	Video Tape

Ambient Temp.: 48°F Wind Speed/Dir.: 8 mph, 123°SE
 Comments: *Not required – indicant test, only.

DATA SHEET 21
EMERGENCY BRAKE STOPPING TEST
PRIMARY CONTROL LINE FAILURE @ LLVW

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck

TRC Vehicle No.: C70702 Initial/End Odo.: 20,732 / 20,748

Dates: 04/03/08 Driver: R. Heberling Tech./Video: R. Landes

Project/Segment Nos.: 20040769/8000 Times: 13:50 – 14:45

Ambient Temperature: 32° to 100°F.

IBTs: 150° to 200°F.

Requirements: Air system fully charged before each stop.

With ABS - fully apply service brake; without - driver modulates control.

Perform stops in neutral or with clutch depressed.

One of the six stops MUST be equal or less than the requirement distance.

Engage service brake any time after opening solenoid.

Dist. Req. (ft.) @ 60 mph: All Vehicles EXCEPT Tractors: 613; Unloaded Tractors: 720.

60 MPH EMERGENCY BRAKE STOPS - LLVW (Primary Control Line)

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12-foot Lane?	Wheel Lock-up Indication Position, Spd. (mph), Time or length locked.	Comments
1	102.8	60.2	203.7	202.1	Yes	RI & LR @ 37, both to end.	Video Tape
2	99.3	60.5	220.0	216.1	Yes	RI & LR @ 40, both to end.	Video Tape
3	100.9	59.7	211.9	213.9	Yes	RI & LR @ 37, both to end.	None
4	103.0	60.0	205.1	204.9	Yes	RI & LR @ 37, both to end.	None
5	102.5	60.2	207.8	206.3	Yes	RI & LR @ 37, both to end.	None
6*	99.8	19.8	31.0	31.6	Yes	NO	Video Tape

Ambient Temp.: 51°F Wind Speed/Dir.: 16 mph, 127°SE

Comments: *Not required – indicant test, only.

**DATA SHEET 22
PARK BRAKE TEST
20% GRADE HOLDING - LLVW**

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck

TRC Vehicle No.: C70702 Initial/End Odo.: 20,751

Date: 04/03/08 Driver: R. Heberling Tech./Video: R. Landes

Project/Segment Nos.: 20040769/8000 Time: 15:20 – 15:410

Ambient Temperature: 32° to 100°F.

IBT's: 150° to 200°F.

Parking Brake Chamber(s) Pressure 0 psi

20% GRADE HOLDING - LLVW

<u> </u> GVWR <u> X </u> LLVW	Initial Brake Temperature(s) (°F)	Control Pressure to Hold Vehicle (psi)	Movement to Become Stationary on Grade (inches)	Stationary on Grade For 5 minutes	
	Hottest Brake			Yes	No
Up Grade	182	26	0	X	
Down Grade	171	23	0	X	

Ambient Temp.: 53°F

Wind Speed: 15 mph

Direction: 155°SE

REMARKS: The test vehicle remained stationary on the grade facing upgrade and downgrade for the required 5-minute period. Both directions were video taped.

DATA SHEET 23
FINAL INSPECTION

Vehicle: 2007 McNeilus 11-Yd. Mixer (8X4) Truck
TRC Vehicle No.: C70702 Final Odo.: 20,757
Project/Segment Nos.: 20040769/8000 Time: 13:00
Date: 04/07/08 Driver: NA Tech.: R. Landes

Brake Stroke Measurements @ 85 PSI (in.)	"Free-Stroke" Measurements (in.)
Axle 1 Left/Right <u>1 1/4</u> / <u>1 1/4</u>	Axle 1 Left/Right <u>5/16</u> / <u>1/4</u>
Axle 2 Left/Right <u>1 5/16</u> / <u>1 1/4</u>	Axle 2 Left/Right <u>3/8</u> / <u>3/8</u>
Axle 3 Left/Right <u>1 5/16</u> / <u>1 1/4</u>	Axle 3 Left/Right <u>3/8</u> / <u>3/8</u>
Axle 4 Left/Right <u>1 1/4</u> / <u>1 1/2</u>	Axle 4 Left/Right <u>9/16</u> / <u>5/8</u>

SERVICE BRAKES

All Brakes Structurally Intact: ☒ Yes ☐ No

All Brakes Function Properly: ☒ Yes ☐ No

All Brakes Adjusted Within Manufacturers Recommendation: ☒ Yes ☐ No

Overall Condition of Test Vehicle: Very Good - Used.

Tires replaced: ☒ Yes* ☐ No

New Brake Linings: Axle #1 ☒ Yes ☐ No; Axle #2 ☒ Yes ☐ No;
Axle #3 ☒ Yes ☐ No; Axle #4 ☒ Yes ☐ No;

Additional Comments:

Overall condition of the foundation brake linings, post-test, would be described as normal in appearance and color and contact area. No deep fractures or separations were present. Light glazing was present on the front linings, none on other linings. Additionally, the rear drum's appearance would be described as normal, smooth, high polish with light to moderate material transfer/banding and light debris. The front drums displayed moderate material transfer and light polish. The TAG axle drums possessed no material transfer or discoloration and very light polish.

*The TAG axle tires were replaced *after* the test was completed.

SECTION 5.0

Instrumentation List

INSTRUMENTATION LIST
INSTRUMENT CALIBRATION (12 MONTH MAXIMUM INTERVAL)

Instrumentation	Serial Number (I.D. No.)	Calibration Date	Next Calibration Date
A-DAT DSR-06 Radar Fifth Wheel	140.00082	Daily on a measured mile	N/A
Lock-Up Detection System	TRC Prop.	Calibrated before test	N/A
Treadle Pressure Transducer	PT-897090	Calibrated before test using a dead weight	N/A
Pressure Transducer	PT-359018	Calibrated before test using a dead weight	N/A
Pressure Transducer	PT-351132	Calibrated before test using a dead weight	N/A
Pressure Transducer	PT-169755	Calibrated before test using a dead weight	N/A
Pressure Transducer	PT-355434	Calibrated before test using a dead weight	N/A
Mansfield-Green Dead Weight Calibrator	DW-6253	04/20/07	04/20/08
Setra Accelerometer	A-167627	Calibrated before test utilizing known calibrated inclines.	N/A
Davis - Ambient Temp. Model 6152	070321N01	03/21/07	03/21/08
Davis – Wind Velocity Model 6140	070321N03	03/21/07	03/21/08
Thermocouples	T52-0B-24K	Calibrated before test	N/A
Toledo Mettler Scales	JXGA- 5318823-5KD	02/13/08	05/13/08
McDaniel, Tire Press. Gauge (0-160 psi)	AG-093	02/02/08	05/02/08
LINK System 2060	2030	11/05/07	11/05/08
Toshiba PC (used with LINK)	43366	N/A	N/A

APPENDIX A

PHOTOGRAPHS

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
March 2008



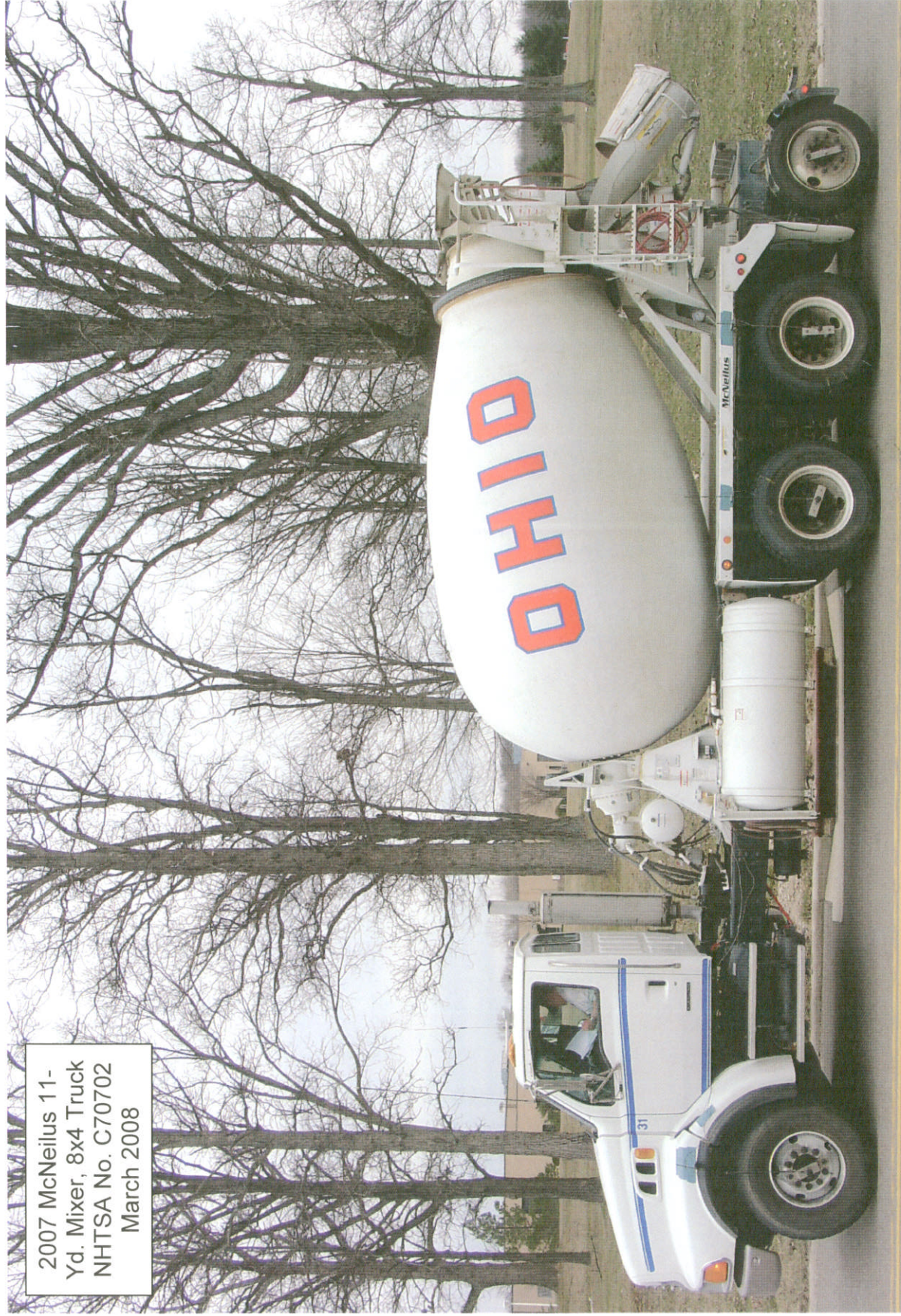
Front View @ GWR

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
March 2008



Right Side View @ GWR

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
March 2008



Left Side View @ GWWR

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
March 2008



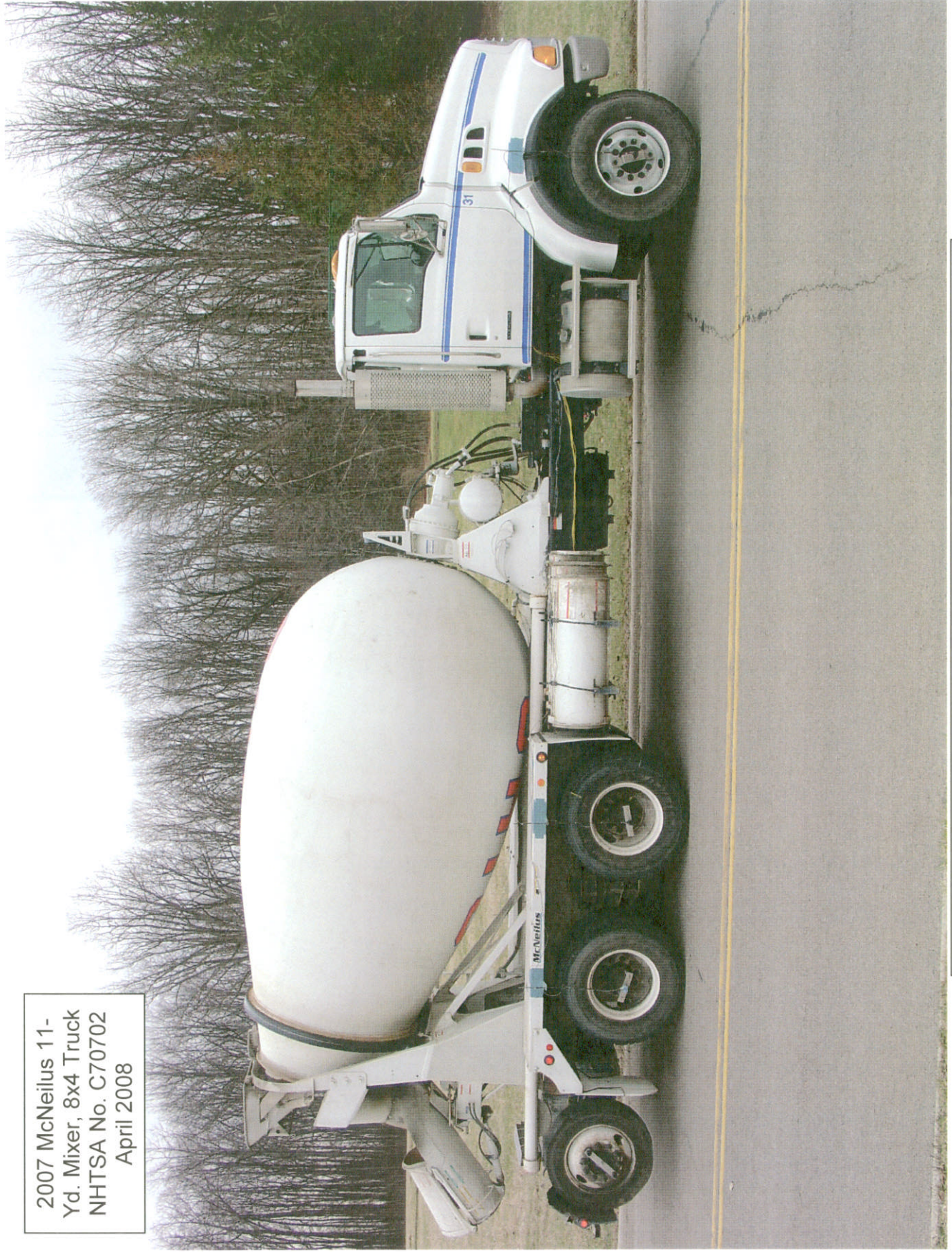
Rear View @ GWR

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
April 2008



Front View @ LLW

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
April 2008



Right Side View @ LLVW

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
April 2008



Left Side View @ LLVW

2007 McNeilus 11-Yd. Mixer, 8x4 Truck
NHTSA No. C70702
April 2008



Rear View @ LLVW

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
April 2008

MFD. BY McNEILUS TRUCK & MFG. INC		INCOMPLETE VEHICLE MFD. BY		STERLING		DATE	
GVWR	LB	KG	VEHICLE TYPE CLASSIFICATION	TRUCK	VEHICLE ID #	2FZHAWDA77AZ40474	
FR. GAWR	20,000	9,072	W/ 425/65R22.5	22.5 x 12.25	RIMS @ 120	PSI COLD	830 KPA
1ST GAWR	20,000	9,072	W/ 11R22.5	22.5 x 8.25	RIMS @ 120	PSI COLD	830 KPA
2ND GAWR			W/		RIMS @	PSI COLD	KPA
3RD GAWR			W/		RIMS @	PSI COLD	KPA
4TH GAWR	20,000	9,072	W/ 11R22.5	22.5 x 8.25	RIMS @ 120	PSI COLD	830 KPA
REAR GAWR	11,020	4,999	W/ 255/70R22.5	22.5 x 8.25	RIMS @ 115	PSI COLD	790 KPA

CONFORMITY OF THE CHASSIS-CAB TO FEDERAL MOTOR VEHICLE SAFETY STANDARDS WHICH HAVE BEEN PREVIOUSLY FULLY CERTIFIED BY THE INCOMPLETE VEHICLE MANUFACTURER OR BY THE INTERMEDIATE VEHICLE MANUFACTURER, HAS NOT BEEN AFFECTED BY FINAL-STAGE MANUFACTURE. THE VEHICLE HAS BEEN COMPLETED IN ACCORDANCE WITH THE PRIOR MANUFACTURER'S INSTRUCTIONS WHERE APPLICABLE. THIS VEHICLE CONFORMS TO ALL OTHER SAFETY STANDARDS IN EFFECT IN: MO. JUN 2006

Final Stage Manufacturer's Placard

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
April 2008

THIS CHASSIS-CAB CONFORMS TO FEDERAL MOTOR VEHICLE
SAFETY STANDARDS 101, 102, 103, 104, 106, 107, 111, 113
120, 105/121, 124, 205, 206, 207, 208, 209, 210 & 302.
CONFORMITY TO OTHER SAFETY STANDARDS APPLICABLE TO
THIS VEHICLE WHEN COMPLETED IS NOT SUBSTANTIALLY
AFFECTED BY THE DESIGN OF THE CHASSIS-CAB.
IF COMPLETED IN ACCORDANCE WITH INSTRUCTIONS IN THE INCOMPLETE VEHICLE DOCUMENT
Pursuant to 49CFR, PART 568, THIS VEHICLE WILL CONFORM TO FMVSS 108.
TYPE: TRUCK
MANUFACTURED BY
VEHICLE ID NO
DATE OF MFR
GVWR-RR
GVWR-LBS
STERLING TRK C
2FZHAHDA77HX40
03/06 216
27,216
20,000
MADE IN CANADA

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
April 2008

FRONT AXLE		FIRST INT AXLE		SECOND INT AXLE		THIRD INT AXLE		FOURTH INT AXLE		FIFTH INT AXLE		SIXTH INT AXLE		REAR AXLE	
GVWR-LBS	9,072	20,000	425/5122	511	22	5122	22	5122	22	5122	22	5122	22	5122	22
WPA COLD	827	724	105	0											
PST COLD	827	724	105	0											
WPA COLD	827	724	105	0											
DATE OF MANUFACTURE	03/06														
STERLING TRUCK CORPORATION															
THIS INCOMPLETE VEHICLE, AS DELIVERED BY FREIGHTLINER LLC, IS CAPABLE TO MEDIUM															
CONFORMS TO U.S. EPA REGULATIONS FOR NOISE EMISSION APPLICABLE TO MANUFACTURER															
AND HEAVY TRUCKS. IT IS THE RESPONSIBILITY OF THE FINAL STAGE MANUFACTURER															
TO COMPLETE THIS VEHICLE WHILE MAINTAINING CONFORMANCE TO 40 CFR PART 205,															
INCLUDING LABELING FOR COMPLIANCE (SEC. 205.55-4)															
L PART NO. 24-01362-020 REV A															

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
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April 2008

PERFORMANCE RATED



11
CUBIC YARD
MIXER
MAXIMUM CAPACITY
(8.4 CUBIC METERS)
REAR DISCHARGE
TYPE UNIT

CERTIFIED BY THE TRUCK MIXER MANUFACTURES
BUREAU TO COMPLY WITH ITS STANDARDS FOR TRUCK
MIXERS AND AGITATORS AS APPROVED BY THE NRMCA.
MAXIMUM AGITATOR CAPACITY IS CERTIFIED NOT
TO EXCEED THE LIMIT
ESTABLISHED BY THESE
STANDARDS AND IS
DESIGNATED ON THE
MANUFACTURERS
DATA PLATE.



NRMCA REGISTRY NO. PRH- 511

TRADEMARK ®

11 Cubic Yard Mixer 8.41 Cubic Meter Mixer Maximum Capacity

Serial Number

Drum Volume
497 Cu. Ft. 14.07 Cu. M.
Manufacturer's Rated Mix Capacity 11 Cu. Yd. 8.41 Cu. M.
*Average Agitator Capacity 13 Cu. Yd. 9.94 Cu. M.

Mixing speed range 6 to 16 R.P.M.
Agitating speed range 2 to 6 R.P.M.

*The agitation capacity of inclined drum, open end
mixers will vary and is governed by drum axis angle,
slump, drum speed, truck chassis suspension, road grade
and other variables.

Water Tank Capacities

Measuring Capacity Gallons
Liters

WARNING

The manufacturer's data plate affixed to this mixer,
indicating the mixer and agitator rating of the drum,
specifies the performance of a drum as a mixer, and/or
agitator only. The weight of different mixes may vary.
DO NOT FILL the mixer drum with an amount of concrete
that will cause the GVWR or GAWR of the truck (as
shown on the certification label of vehicle manufacturer)
to be exceeded.

MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING PATENTS
OR THEIR FOREIGN EQUIVALENTS:
4,705,133 - 4,848,783 - 4,458,800 - 4,498,568 -
4,684,142 - 81 - 4,492,389 - 4,762,421 - 4,812,044 - 4,951,261 -
5,018,755 - 5,056,924 - 5,067,740 - DES.320,837 - 5,056,641 -
5,076,703 - DES.329,315 - 5,107,679 - 5,121,989 - 5,184,706 -
5,215,178 - 5,378,061 - 5,400,694 - 5,427,449 - 5,498,021 -
6,149,291 - 6,247,713
ADDITIONAL PATENT OR PATENTS PENDING

McNeilus

McNeilus Truck and Manufacturing, Inc.

County Road 34 East
PO Box 70
Dodge Center, MN 55927
Phone (507) 374-6321

780.00621

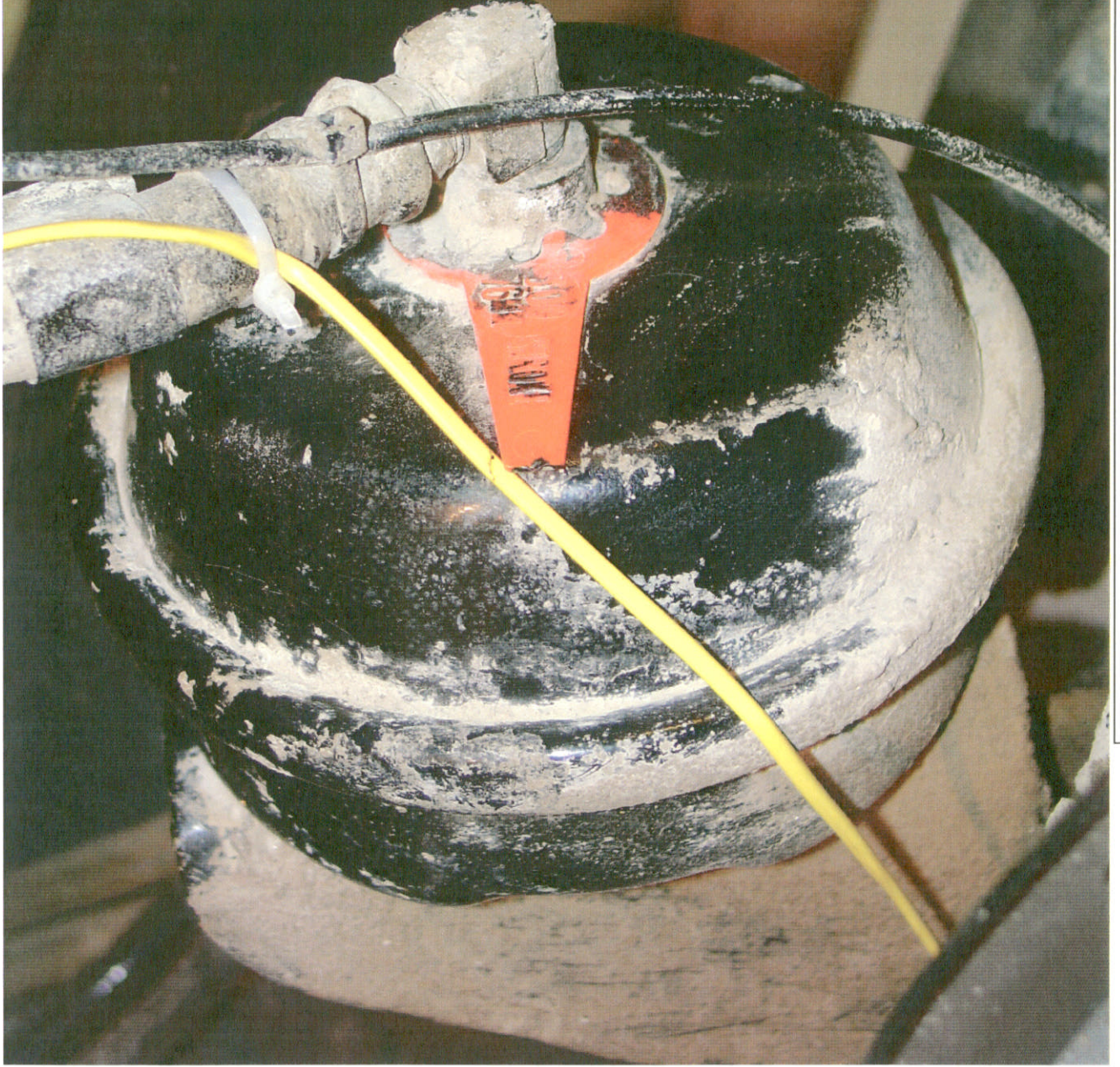
Final Stage Manufacturer's Mixer Specification Placard

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
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March 2008



Left Front/Steer Brake Assembly

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
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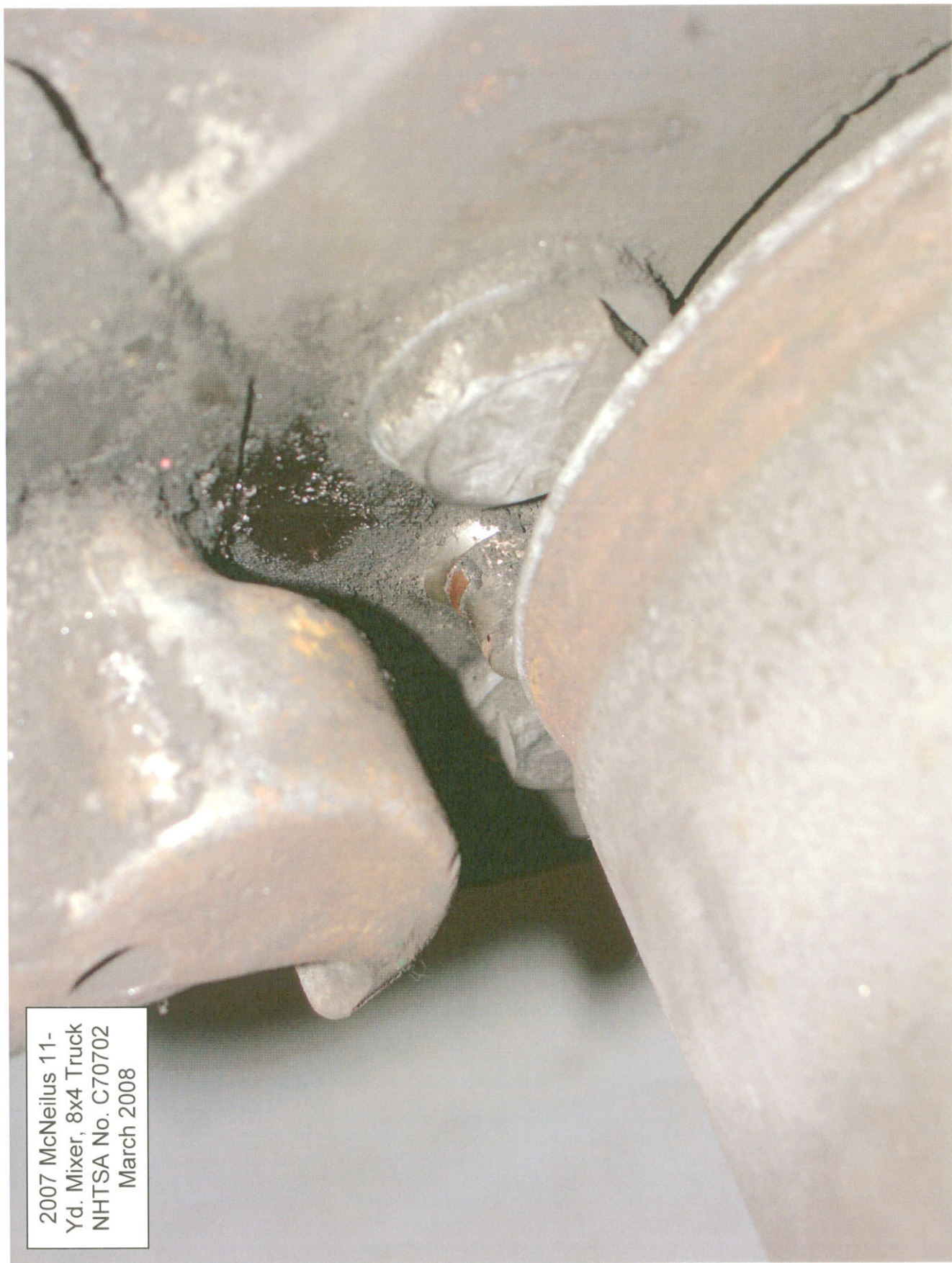
Left Front/Steer Brake Chamber

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
March 2008



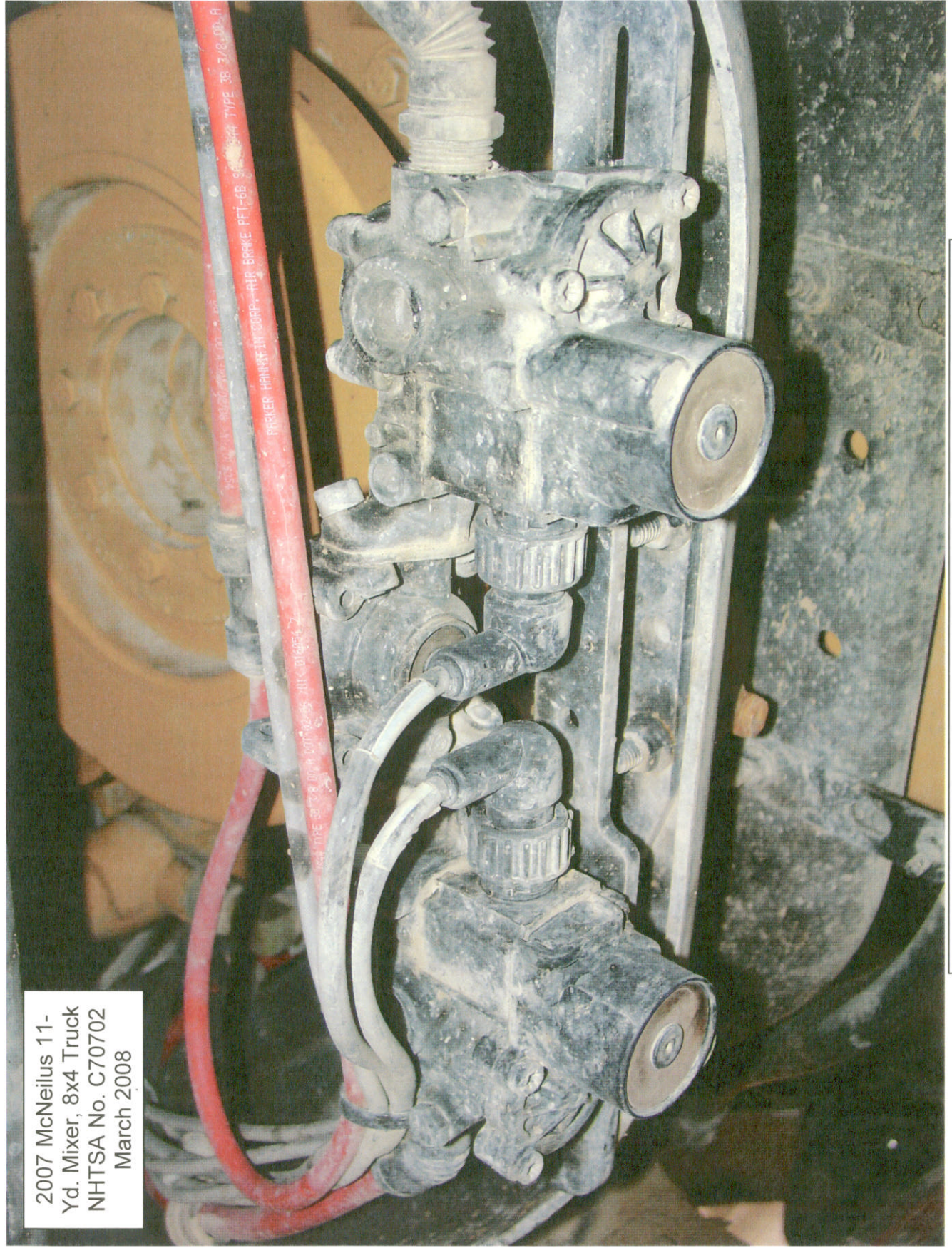
Left Front/Steer Brake Slack Adjuster

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
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Left Front/Steer Brake Wheel Speed Sensor

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
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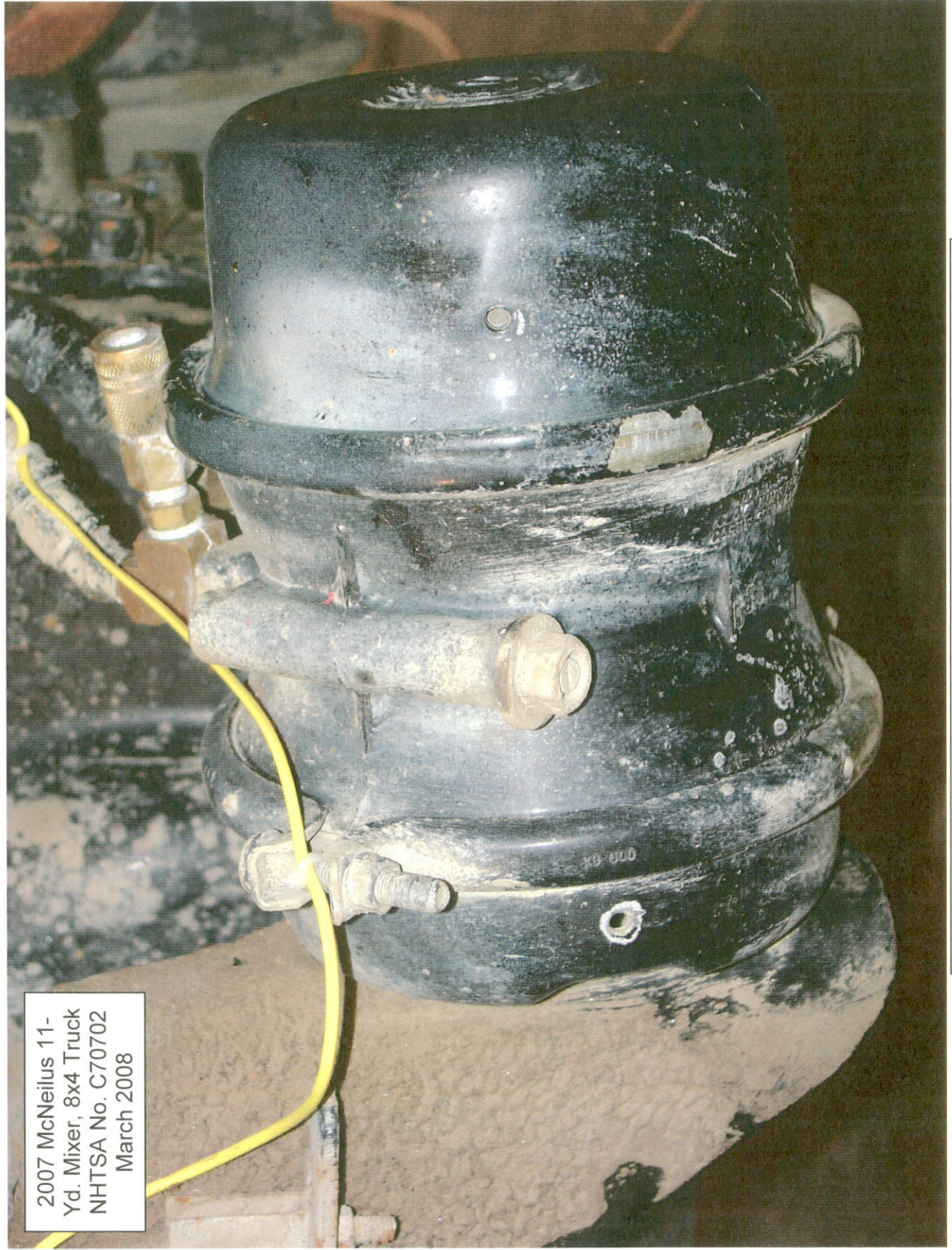
Steer Axle ABS Modulators and Quick Release Valve

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
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Right Intermediate Drive Brake Assembly

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
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Right Intermediate Drive Brake Chamber

2007 McNeilus 11-
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Right Intermediate Drive Brake Slack Adjuster

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Right Intermediate Drive Thermocouple Installation

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Right Rear Drive Brake Assembly

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
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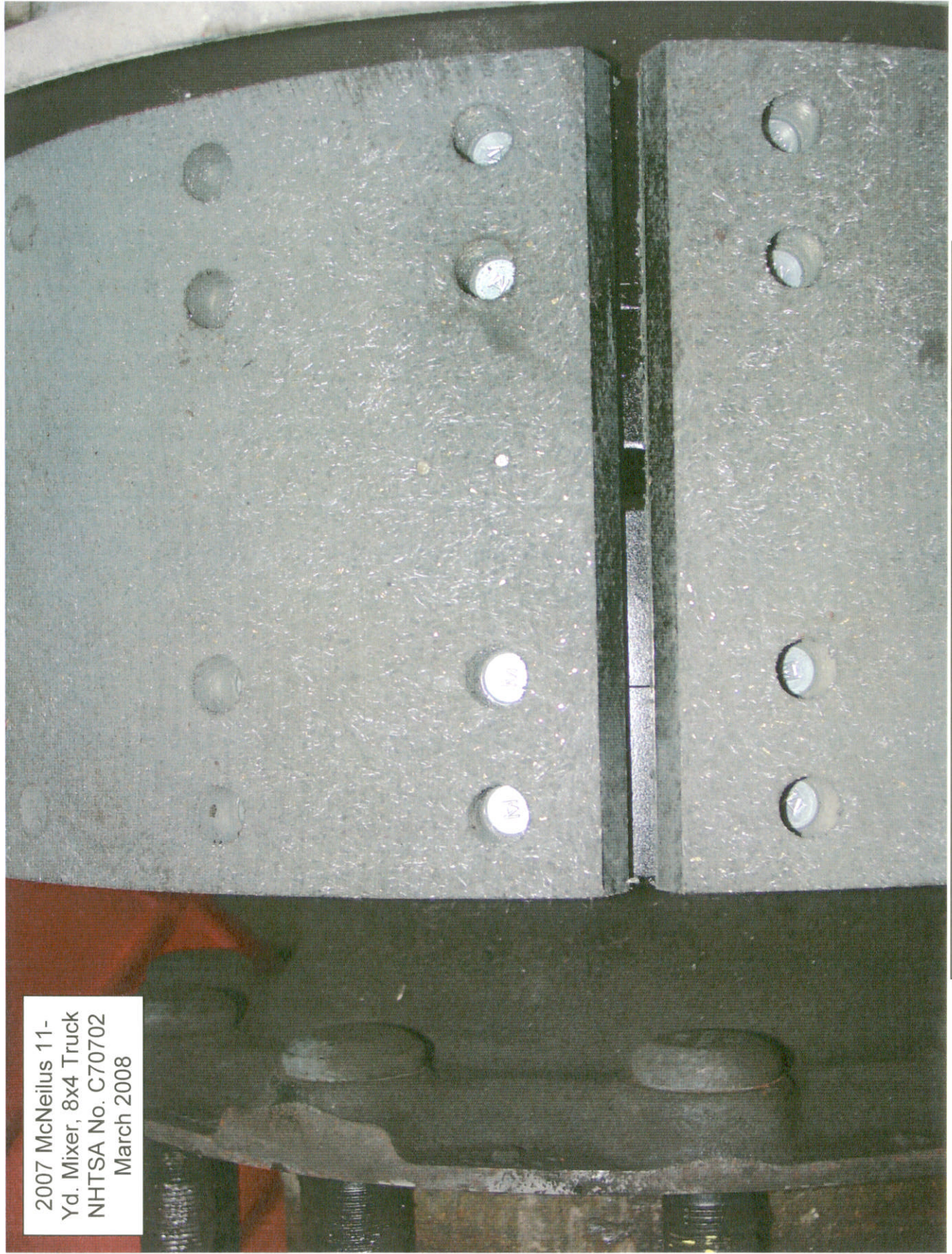
Right Rear Drive Brake Chamber

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
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March 2008



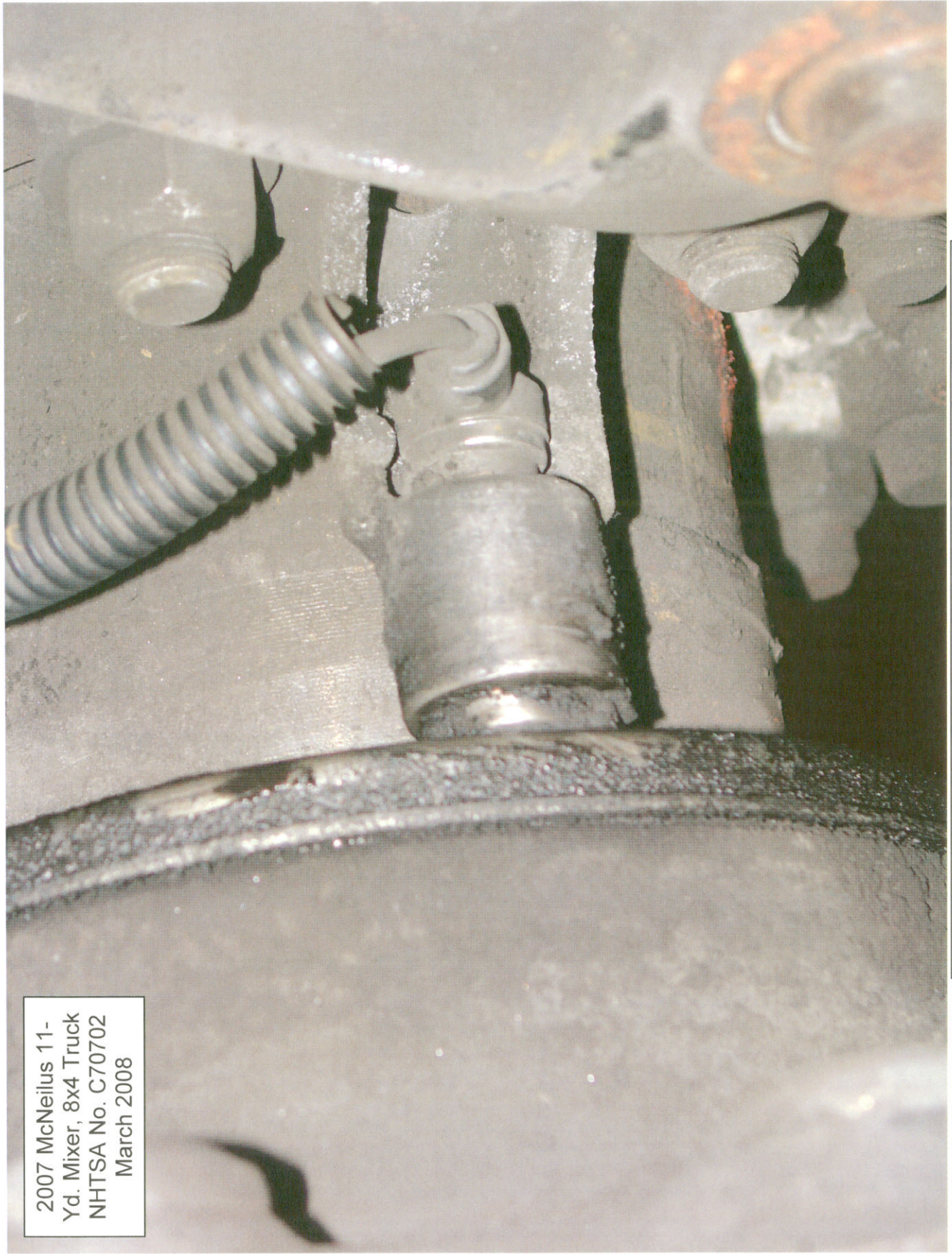
Right Rear Drive Brake Slack Adjuster

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
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Right Rear Drive Brake Thermocouple Installation

2007 McNeilus 11-
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Right Rear Drive Brake Wheel Speed Sensor

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
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March 2008



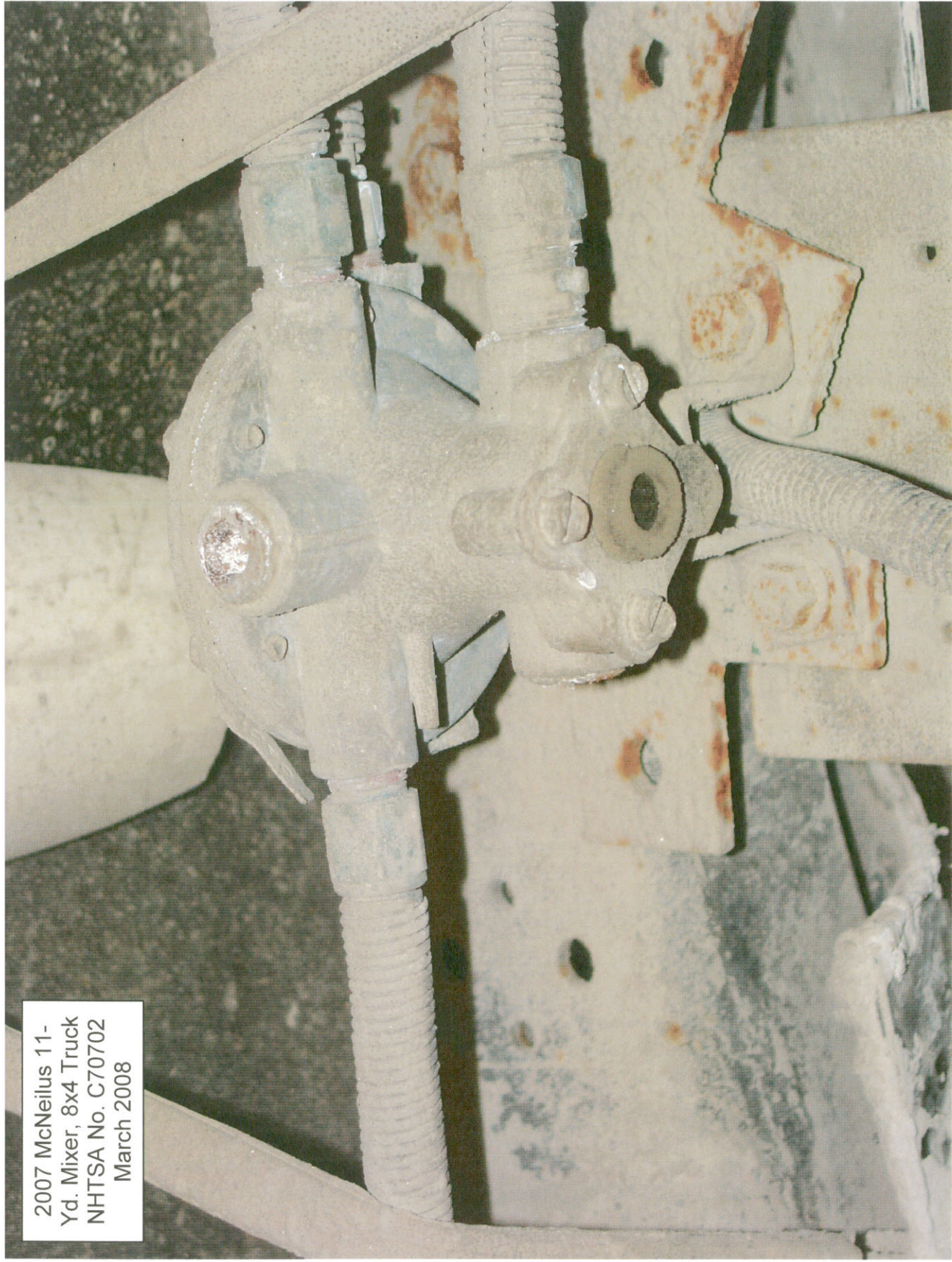
Rear Brake ABS and R12 Valves

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
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Rear Brake System Valve



2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
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Rear Brake System Valve

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Right Rear Tag Axle Brake Assembly

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
March 2008



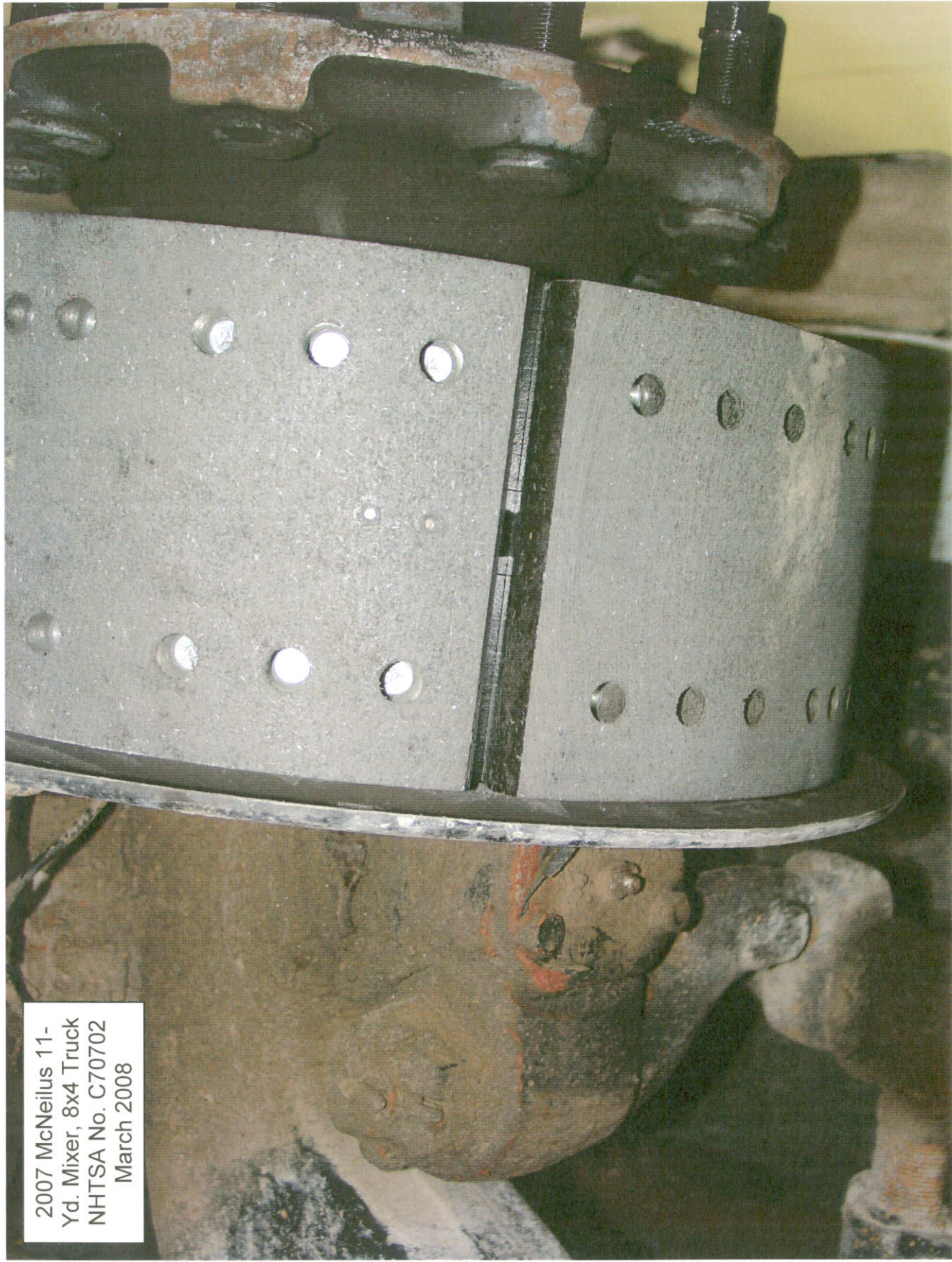
Right Rear Tag Axle Brake Chamber

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
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March 2008



Right Rear Tag Axle Brake Slack Adjuster

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
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Right Rear Tag Axle Brake Thermocouple Installation

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
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Brake System Air Dryer

2007 McNeilus 11-
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Brake System Air Compressor

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
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Brake System Air Reservoirs (Primary near, Secondary/Supply far)

2007 McNeilus 11-
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Instrumentation in Vehicle

2007 McNeilus 11-
Yd. Mixer, 8x4 Truck
NHTSA No. C70702
March 2008



Dash Warning Lamps

APPENDIX B

TEST DATA FROM REPORT GENERATOR

Vehicle: 2007 MCNEILUS TRUCK	NHTSA NUMBER: C70702	Transportation Research Center, Inc.
Make: MCNEILUS		10820 State Route 347
Model: 79130		East Liberty, Ohio 43319
Body Style: 11-YD. MIXER		
Front Cold Tire Pressure: 120 (psi)		
Rear Cold Tire Pressure: 105 (psi)		Date Tested: 03/20/08

DATA SHEET 10 - BURNISH AT GVWR

Testing Conditions: INV DATA, Section 0030, 03/20/08, 10:04:39

Weather Conditions: 44°F Wind: 18 mph 97% Start Odo.: 19970 End Odo.: 20229

Schedule:

Initial Brake Temperature Less Than 200°F
Initial Speed 40 mph to 20 mph
500 snubs with transmission in gear

Performance Requirements:

Interval between runs: Time necessary to reach speed of 40 mph and 1 mile, or 1.5 miles, whichever occurs first.
Constant decel rate: 10 ft/sec²
Pedal force adjusted to maintain constant decel.
No Lock-Up allowed longer than 0.1 sec above 10 mph
Vehicle Must stay in lane of 12 ft.

SNUB #	INIT	LEFT FRONT	RIGHT FRONT	LEFT INTRM	RIGHT INTERM	LEFT REAR	RIGHT REAR	LEFT TAG	RIGHT TAG	AVG. TREADLE	AVG. DECEL
	SPD (mph)	IBT (°F)	IBT (°F)	IBT (°F)	IBT (°F)	IBT (°F)	IBT (°F)	IBT (°F)	IBT (°F)	PRESSURE (psi)	(ft/sec ²)
1	40.26	67	65	53	72	70	69	66	64	55.64	9.47
25	40.01	296	286	-100	396	396	385	205	192	53.98	10.98
50	39.94	312	282	380	415	520	483	312	290	43.01	10.65
75	39.91	315	272	435	434	584	527	298	272	36.11	10.83
100	40.07	308	261	427	415	554	500	265	241	33.94	11.42
125	40.37	289	242	419	430	549	518	267	242	32.52	10.08
150	40.04	300	263	393	414	490	474	271	241	45.73	10.82
175	40.20	294	295	437	463	560	542	290	260	40.23	10.03
200	39.70	304	269	471	482	566	551	289	257	34.42	10.49
225	40.49	294	260	483	482	551	542	280	246	38.50	10.18
250	39.77	326	266	493	512	570	564	298	269	42.82	10.76
275	39.88	284	232	384	413	454	438	274	259	43.88	10.06
300	39.57	293	239	453	486	538	535	292	274	41.45	10.71
325	39.77	290	232	475	492	537	538	279	259	36.81	10.07
350	40.23	291	259	477	503	547	548	287	265	38.94	9.99
375	39.78	300	250	489	525	564	567	294	271	38.77	10.51
400	39.75	270	242	433	468	515	505	284	259	41.48	9.98
425	39.62	289	233	466	511	541	542	289	267	38.92	9.94
450	39.51	319	283	495	539	567	566	302	282	35.38	10.61
475	40.35	288	282	496	541	572	569	304	284	36.43	10.63
500	40.15	288	242	484	510	538	535	278	250	30.97	10.32

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HERBERL	Observer: NONE
Recorded Data Processed by: CHUCK JENKINS	Date: 04/10/08
Approving Laboratory Official: RANDALL LANDES	Date: 04/14/04

Vehicle: 2007 MCNEILUS TRUCK
Make: MCNEILUS
Model: 79130
Body Style: 11-YD. MIXER
Front Cold Tire Pressure: 120 (psi)
Rear Cold Tire Pressure: 105 (psi)

NHTSA NUMBER: C70702

Transportation Research Center, Inc.
10820 State Route 347
East Liberty, Ohio 43319

Date Tested: 03/26/08

DATA SHEET 12 - SERVICE BRAKE STOPPING DISTANCE AT GVWR

Testing Conditions: INV DATA, Section 0045, 03/26/08, 13:46:59

Weather Conditions: 53°F Wind: 9 mph 261°

Start Odo: 20515

End Odo: 20536

Schedule:

Initial Brake Temperature: <200°F
Initial Speed: 60 mph, or, if unattainable,
a speed multiple of 5.
6 stops with transmission in neutral

Performance Requirements:

One Stop with:
Stopping Distance less than: 310.0 feet
(See Table 1 of FMVSS121, "Stopping Distance Requirements")
Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel
Vehicle Must stay in lane of 12 ft.

STOP	INIT	LEFT	RIGHT	LINT	RINT	LEFT	RIGHT	LTAG	RTAG		CORRECTED	MAX.	AVG.		
#	SPD	FRONT	FRONT	AXLE	AXLE	REAR	REAR	AXLE	AXLE	ACTUAL	DISTANCE	TREADLE	TREADLE	MAX.	AVG.
	(mph)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(feet)	(SAE 299)	(psi)	(psi)	(ft/sec ²)	(ft/sec ²)
1	60.90	114	102	136	155	181	178	128	110	288.3	279.8	116.31	105.71	32.04	14.85
2	60.68	137	124	154	172	208	197	99	88	283.7	277.3	117.46	106.01	43.11	14.64
3	59.83	133	116	135	157	190	181	79	74	310.4	312.2	109.01	100.04	36.22	13.69
4	60.53	142	127	144	160	196	188	71	66	304.7	299.4	114.04	103.28	49.51	13.56
5	60.44	138	128	142	155	198	184	68	66	295.1	290.8	109.62	98.73	29.14	12.48
6	20.45	148	134	202	166	199	192	66	63	33.6	32.0	117.90	107.90	34.61	14.23

STOP	DRIVER VEHICLE STOP COMMENTS			
#	(Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	BTX	SOUTH	YES
2	-	BTX	SOUTH	YES
3	-	BTX	SOUTH	YES
4	-	BTX	SOUTH	YES
5	-	BTX	SOUTH	YES
6	-	BTX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HERBERL Observer: NONE
Recorded Data Processed by: CHUCK JENKINS Date: 04/10/08
Approving Laboratory Official: RANDALL LANDES Date: 04/14/04

Vehicle: 2007 MCNEILUS TRUCK NHTSA NUMBER: C70702
 Make: MCNEILUS
 Model: 79130
 Body Style: 11-YD. MIXER
 Front Cold Tire Pressure: 120 (psi)
 Rear Cold Tire Pressure: 105 (psi)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319

Date Tested: 03/28/08

DATA SHEET 13 - EMERGENCY BRAKE STOPPING DISTANCE AT GVWR Primary Reservoir Failure

Testing Conditions: INV DATA, Section 0050, 03/28/08, 14:23:59

Weather Conditions: 37°F Wind: 9 mph 329° Start Odo: 20552 End Odo: 20582

Schedule:

Initial Brake Temperature: <200°F
 Initial Speed: 60 mph, or, if unattainable,
 a speed multiple of 5.
 6 stops with transmission in gear

Performance Requirements:

One Stop with:
 Stopping Distance less than: 613.0 feet
 (See Table 1 of FMVSS121, "Stopping Distance Requirements")
 Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel
 Vehicle Must stay in lane of 12 ft.

STOP	INIT	LEFT	RIGHT	LINT	RIGHT	LEFT	RIGHT	LTAG	RTAG		CORRECTED	MAX.	AVG.		
#	SPD	FRONT	FRONT	AXLE	AXLE	REAR	REAR	AXLE	AXLE	ACTUAL	DISTANCE	TREADLE	TREADLE	MAX.	AVG.
	(mph)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(feet)	(feet)	(psi)	(psi)	(ft/sec ²)	(ft/sec ²)
1	58.64	100	94	127	157	161	167	112	102	348.6	365.0	65.20	53.47	34.85	15.57
2	60.52	101	102	112	157	164	168	87	81	385.5	378.9	59.16	47.36	36.45	17.52
3	60.23	138	129	132	184	199	191	79	82	365.7	362.9	56.42	45.39	42.20	16.87
4	59.92	132	126	130	176	198	187	70	78	362.4	363.4	55.43	42.50	35.76	16.42
5	60.72	128	121	128	173	202	186	69	76	372.0	363.3	58.33	47.06	35.42	16.55
6	20.08	131	118	156	161	199	179	62	69	42.4	42.1	56.00	50.48	44.41	17.38

STOP	DRIVER VEHICLE STOP COMMENTS				
#	(Wheel Lock up	-	Direction of Stop	-	Stay in Lane)
1	-		BTX	SOUTH	YES
2	-		BTX	SOUTH	YES
3	-		BTX	SOUTH	YES
4	-		BTX	SOUTH	YES
5	-		BTX	SOUTH	YES
6	-		BTX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HERBERL Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 04/10/08
 Approving Laboratory Official: RANDALL LANDES Date: 04/14/04

Vehicle: 2007 MCNEILUS TRUCK	NHTSA NUMBER: C70702	Transportation Research Center, Inc.
Make: MCNEILUS		10820 State Route 347
Model: 79130		East Liberty, Ohio 43319
Body Style: 11-YD. MIXER		
Front Cold Tire Pressure: 120 (psi)		
Rear Cold Tire Pressure: 105 (psi)		Date Tested: 04/02/08

DATA SHEET 14 - EMERGENCY BRAKE SECONDARY STOPPING DISTANCE AT GVWR Secondary Reservoir Failure

Testing Conditions: INV DATA, Section 0051, 04/02/08, 08:50:30

Weather Conditions: 35°F Wind: 7 mph 67° Start Odo: 20597 End Odo: 20621

Schedule:

Initial Brake Temperature: <200°F
Initial Speed: 60 mph, or, if unattainable,
a speed multiple of 5.
6 stops with transmission in gear

Performance Requirements:

One Stop with:
Stopping Distance less than: 613.0 feet
(See Table 1 of FMVSS121, "Stopping Distance Requirements")
Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel
Vehicle Must stay in lane of 12 ft.

STOP #	INIT SPD (mph)	LEFT FRONT	RIGHT FRONT	LINT AXLE	RINT AXLE	LEFT REAR	RIGHT REAR	LTAG AXLE	RTAG AXLE	ACTUAL DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	MAX. TREADLE PRESSURE (psi)	AVG. TREADLE PRESSURE (psi)	MAX. DECEL (ft/sec²)	AVG. DECEL (ft/sec²)
		(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)			(psi)	(psi)	(ft/sec²)	(ft/sec²)
=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
1	59.88	108	102	137	165	177	181	125	109	352.2	353.5	97.61	88.87	34.22	12.61
2	59.86	96	89	143	172	188	193	81	81	352.2	353.8	102.36	51.51	39.12	6.85
3	60.16	92	85	142	174	192	197	74	74	327.1	325.3	104.25	92.72	40.05	13.44
4	59.07	90	85	147	180	198	202	64	64	324.9	335.3	102.83	95.30	34.92	16.02
5	61.28	90	86	153	187	199	208	60	64	340.4	326.3	102.76	94.20	37.75	17.44
6	19.31	90	83	155	174	196	201	56	55	39.8	42.7	102.20	95.15	26.27	13.44

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock up - Direction of Stop - Stay in Lane)			
=====	=====			
1	BTX	SOUTH	YES	
2	BTX	SOUTH	YES	
3	BTX	SOUTH	YES	
4	BTX	SOUTH	YES	
5	BTX	SOUTH	YES	
6	NOX	SOUTH	YES	

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HERBERL	Observer: NONE
Recorded Data Processed by: CHUCK JENKINS	Date: 04/10/08
Approving Laboratory Official: RANDALL LANDES	Date: 04/14/04

Vehicle: 2007 MCNEILUS TRUCK
Make: MCNEILUS
Model: 79130
Body Style: 11-YD. MIXER
Front Cold Tire Pressure: 120 (psi)
Rear Cold Tire Pressure: 105 (psi)

NHTSA NUMBER: C70702

Transportation Research Center, Inc.
10820 State Route 347
East Liberty, Ohio 43319

Date Tested: 04/02/08

DATA SHEET 15 - EMERGENCY BRAKE CONTROL LINE FAILURE DISTANCE @GVWR Control Line Failure

Testing Conditions: INV DATA, Section 0052, 04/02/08, 12:29:30

Weather Conditions: 42°F Wind: 6 mph 360°

Start Odo: 20624

End Odo: 20647

Schedule:

Initial Brake Temperature: <200°F
Initial Speed: 60 mph, or, if unattainable,
a speed multiple of 5.
6 stops with transmission in gear

Performance Requirements:

One Stop with:
Stopping Distance less than: 613.0 feet
(See Table 1 of FMVSS121, "Stopping Distance Requirements")
Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel
Vehicle Must stay in lane of 12 ft.

STOP	INIT	LEFT	RIGHT	LINT	RINT	LEFT	RIGHT	LTAG	RTAG		CORRECTED	MAX.	AVG.		
#	SPD	FRONT	FRONT	AXLE	AXLE	REAR	REAR	AXLE	AXLE	ACTUAL	DISTANCE	TREADLE	TREADLE	MAX.	AVG.
	(mph)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(feet)	(SAE 299)	(psi)	(psi)	(ft/sec ²)	(ft/sec ²)
1	60.44	126	108	136	162	172	175	94	84	451.5	445.0	100.93	87.18	32.21	10.84
2	59.74	121	112	94	142	154	147	82	81	423.8	427.6	103.03	90.50	31.40	10.92
3	59.21	184	166	125	178	201	178	77	74	419.4	430.7	102.73	89.64	26.37	10.55
4	59.55	162	157	110	174	197	172	64	65	413.6	419.8	98.01	86.10	33.32	11.06
5	60.14	169	158	112	176	202	172	59	60	428.7	426.6	101.13	88.51	28.55	9.78
6	19.60	165	151	128	172	204	171	60	58	48.4	50.4	99.70	92.93	23.81	11.03

STOP	DRIVER VEHICLE STOP COMMENTS			
#	(Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	BTX	SOUTH	YES
2	-	BTX	SOUTH	YES
3	-	BTX	SOUTH	YES
4	-	BTX	SOUTH	YES
5	-	BTX	SOUTH	YES
6	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HERBERL

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 04/10/08

Approving Laboratory Official: RANDALL LANDES

Date: 04/14/04

Vehicle: 2007 MCNEILUS TRUCK
Make: MCNEILUS
Model: 79130
Body Style: 11-YD. MIXER
Front Cold Tire Pressure: 120 (psi)
Rear Cold Tire Pressure: 105 (psi)

NHTSA NUMBER: C70702

Transportation Research Center, Inc.
10820 State Route 347
East Liberty, Ohio 43319

Date Tested: 04/02/08

DATA SHEET 16 - PARKING BRAKE TEST (GRADE HOLDING) AT GVWR

Testing Conditions: INV DATA, Section 0065, 04/02/08, 15:21:01
Parking brake: N/A
Weather Conditions: 44°F
Test Weight: Total:69480lbs

Non-service type: N/A
Wind: 4 mph
Front: 0lbs

Service type: HAND-OPERATED
Start Odo.: 20650
End Odo.: 20650
Rear: 0lbs

Schedule:

Initial Brake Temperature <200°F or (Ambient temp. if non-service brake type materials)
Loaded to GVWR with transmission in neutral
Drive onto 20% slope in forward and reverse directions.

Performance Requirements:

Up to Three Applies in each direction:
Parking brake must hold the vehicle stationary in both directions for 5 minutes each.

NOTE: For vehicles with parking brake systems not utilizing the service brake friction elements, the friction elements of such systems are to be burnished prior to parking brake tests according to the manufacturer's published recommendation as furnished to the purchaser. If no recommendations are furnished, test the system in an unburnished condition. If recommendations are furnished, record method used.

	MAX	LEFT	RIGHT	AVG	
	SERVICE	REAR	REAR	REAR	
APPLY	FORCE	IBT	IBT	IBT	
#	(psi)	(°F)	(°F)	(°F)	
=====	=====	=====	=====	=====	=====
1	60.3	137	167	152.0	-
2	55.2	201	174	187.5	-

DRIVER VEHICLE STOP COMMENTS
(Direction of Stop (Up/Down) - Brake holds/fails)

Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()
Driver: RICHARD HERBERL
Recorded Data Processed by: CHUCK JENKIKNS
Approving Laboratory Official: RANDALL LANDES

Observer: NONE
Date: 04/10/08
Date: 04/14/04

Vehicle: 2007 MCNEILUS TRUCK NHTSA NUMBER: C70702
 Make: MCNEILUS
 Model: 79130
 Body Style: 11-YD. MIXER
 Front Cold Tire Pressure: 120 (psi)
 Rear Cold Tire Pressure: 105 (psi)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319

Date Tested: 04/03/08

DATA SHEET 17 - STABILITY AND CONTROL AT LLVW

Testing Conditions: INV DATA, Section 0040, 04/03/08, 10:56:32

Weather Conditions: 41°F Wind: 4 mph 100° Start Odo.: 20668 End Odo.: 20671

Schedule:

Initial Brake Temperature <200 F
 Initial Speed <=40 mph LLVW
 4 stops with transmission in neutral

Performance Requirements:

Three Stops with:
 Highest possible constant speed at which vehicle
 can be driven through 200 feet of arc of low
 Mu 500 ft radius curve.
 Vehicle Must stay in lane of 12 feet

		LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT		CORRECTED	MAX.	AVG.		
STOP	INIT	FRONT	FRONT	INT	INT	REAR	REAR	ACTUAL	DISTANCE	TREADLE	TREADLE	MAX.	AVG.
#	SPD	IBT	IBT	IBT	IBT	IBT	IBT	DISTANCE	(SAE 299)	PRESSURE	PRESSURE	DECEL	DECEL
	(mph)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(feet)	(feet)	(psi)	(psi)	(ft/sec²)	(ft/sec²)
=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
1	24.44	146	118	142	166	173	177	116.2	112.1	114.12	82.05	23.36	7.60
2	24.09	146	123	139	167	175	175	112.3	111.5	117.87	72.23	24.48	6.61
3	24.72	153	127	145	175	182	183	122.8	115.6	115.81	78.32	23.97	7.28
4	23.26	158	133	146	179	184	184	111.1	118.3	113.05	69.81	21.43	6.69

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)			
	=====	=====	=====	=====
1	-	RIX	EAST	YES
2	-	NOX	EAST	YES
3	-	RIX	EAST	YES
4	-	NOX	EAST	YES

Corrected Distances are used to determine shortest stopping distance.

COMMENTS: MAXIMUM DRIVE THROUGH SPEED = 32 MPH
 TARGET SPEED IS 75% OF 32 MPH = 24 MPH.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HERBERL Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 04/10/08
 Approving Laboratory Official: RANDALL LANDES Date: 04/14/04

Vehicle: 2007 MCNEILUS TRUCK	NHTSA NUMBER: C70702	Transportation Research Center, Inc.
Make: MCNEILUS		10820 State Route 347
Model: 79130		East Liberty, Ohio 43319
Body Style: 11-YD. MIXER		
Front Cold Tire Pressure: 120 (psi)		Date Tested: 04/03/08
Rear Cold Tire Pressure: 105 (psi)		

DATA SHEET 18 - SERVICE BRAKE STOPPING DISTANCE AT LLVW

Testing Conditions: INV DATA, Section 0046, 04/03/08, 11:29:18

Weather Conditions: 44°F Wind: 6 mph 107° Start Odo: 20671 End Odo: 20689

Schedule:

Initial Brake Temperature: <200°F
Initial Speed: 60 mph, or, if unattainable,
a speed multiple of 5.
6 stops with transmission in gear

Performance Requirements:

One Stop with:
Stopping Distance less than: 335.0 feet
(See Table 1 of FMVSS121, "Stopping Distance Requirements")
Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel
Vehicle Must stay in lane of 12 ft.

STOP #	INIT SPD (mph)	LEFT FRONT	RIGHT FRONT	LEFT INT	RIGHT INT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	MAX. TREADLE PRESSURE (psi)	AVG. TREADLE PRESSURE (psi)	MAX. DECEL (ft/sec ²)	AVG. DECEL (ft/sec ²)
		(°F)	(°F)	(°F)	(°F)	(°F)	(°F)			(psi)	(psi)	(ft/sec ²)	(ft/sec ²)
=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
1	59.58	133	121	120	152	157	161	186.1	188.8	113.46	103.08	48.20	24.77
2	60.57	168	147	121	157	167	170	193.3	189.7	116.60	107.45	56.61	24.87
3	60.42	189	166	129	155	175	177	195.7	193.0	115.18	103.89	47.39	25.37
4	61.08	182	163	128	149	172	174	188.8	182.1	116.65	107.12	66.53	26.35
5	59.19	189	172	124	152	176	180	186.8	192.0	117.24	108.06	55.44	26.41
6	20.24	176	161	131	148	172	177	28.1	27.4	117.72	100.49	43.55	23.16

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock up - Direction of Stop - Stay in Lane)			
=====	=====	=====	=====	=====
1	-	NOX	SOUTH	YES
2	-	RIX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HERBERL	Observer: NONE
Recorded Data Processed by: CHUCK JENKIKNS	Date: 04/10/08
Approving Laboratory Official: RANDALL LANDES	Date: 04/14/04

Vehicle: 2007 MCNEILUS TRUCK	NHTSA NUMBER: C70702	Transportation Research Center, Inc.
Make: MCNEILUS		10820 State Route 347
Model: 79130		East Liberty, Ohio 43319
Body Style: 11-YD. MIXER		
Front Cold Tire Pressure: 120 (psi)		Date Tested: 04/03/08
Rear Cold Tire Pressure: 105 (psi)		

DATA SHEET 19 - EMERGENCY BRAKE STOPPING DISTANCE AT LLVW
Primary Reservoir Failure

Testing Conditions: INV DATA, Section 0053, 04/03/08, 12:06:25

Weather Conditions: 46°F Wind: 9 mph 132° Start Odo: 20689 End Odo: 20709

<u>Schedule:</u>	<u>Performance Requirements:</u>
Initial Brake Temperature: <200°F	One Stop with:
Initial Speed: 60 mph, or, if unattainable,	Stopping Distance less than: <u>613.0 feet</u>
a speed multiple of 5.	(See Table 1 of FMVSS121, "Stopping Distance Requirements")
6 stops with transmission in gear	Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel
	Vehicle Must stay in lane of 12 ft.

STOP #	INIT	LEFT FRONT	RIGHT FRONT	LEFT INT	RIGHT INT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (feet)	CORRECTED DISTANCE (SAB 299) (feet)	MAX. TREADLE PRESSURE (psi)	AVG. TREADLE PRESSURE (psi)	MAX. DECEL (ft/sec²)	AVG. DECEL (ft/sec²)
	SPD (mph)	IBT (°F)	IBT (°F)	IBT (°F)	IBT (°F)	IBT (°F)	IBT (°F)			PRESSURE (psi)	PRESSURE (psi)	DECEL (ft/sec²)	DECEL (ft/sec²)
1	58.40	144	132	107	131	155	159	190.4	200.9	57.70	50.69	54.26	23.58
2	59.47	176	155	111	133	158	169	203.3	206.9	61.17	54.17	39.78	25.25
3	59.43	197	170	116	136	163	176	188.2	191.8	58.44	51.67	42.57	26.79
4	60.10	197	171	123	131	162	176	202.3	201.7	56.56	49.49	40.16	25.49
5	59.63	197	172	123	126	159	174	194.0	196.4	58.60	51.79	58.53	26.54
6	20.12	184	165	127	123	157	167	26.7	26.4	56.31	51.62	43.32	25.19

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)				
1	-	RI & LRX	SOUTH	YES	
2	-	RIX	SOUTH	YES	
3	-	RI & LRX	SOUTH	YES	
4	-	RI & LRX	SOUTH	YES	
5	-	RIX	SOUTH	YES	
6	-	NOX	SOUTH	YES	

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HERBERL Observer: NONE

Recorded Data Processed by: CHUCK JENKIKNS Date: 04/10/08

Approving Laboratory Official: RANDALL LANDES Date: 04/14/04

Vehicle: 2007 MCNEILUS TRUCK NHTSA NUMBER: C70702
 Make: MCNEILUS
 Model: 79130
 Body Style: 11-YD. MIXER
 Front Cold Tire Pressure: 120 (psi)
 Rear Cold Tire Pressure: 105 (psi)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319

Date Tested: 04/03/08

DATA SHEET 20 - EMERGENCY BRAKE SECONDARY STOPPING DISTANCE AT LLVW Secondary Reservoir Failure

Testing Conditions: INV DATA, Section 0054, 04/03/08, 12:46:31

Weather Conditions: 48°F Wind: 8 mph 123° Start Odo: 20709 End Odo: 20728

Schedule:

Initial Brake Temperature: <200°F
 Initial Speed: 60 mph, or, if unattainable,
 a speed multiple of 5.
 6 stops with transmission in gear

Performance Requirements:

One Stop with:
 Stopping Distance less than: 613.0 feet
 (See Table 1 of FMVSS121, "Stopping Distance Requirements")
 Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel
 Vehicle Must stay in lane of 12 ft.

STOP #	INIT SPD (mph)	LEFT FRONT IBT (°F)	RIGHT FRONT IBT (°F)	LEFT INT IBT (°F)	RIGHT INT IBT (°F)	LEFT REAR IBT (°F)	RIGHT REAR IBT (°F)	ACTUAL DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	MAX. TREADLE PRESSURE (psi)	AVG. TREADLE PRESSURE (psi)	MAX. DECEL (ft/sec ²)	AVG. DECEL (ft/sec ²)
1	59.10	156	133	117	126	159	165	233.4	240.5	96.95	90.41	44.10	22.21
2	59.85	165	137	130	146	177	182	245.6	246.8	95.52	88.60	48.11	21.94
3	60.10	171	140	144	162	193	198	239.0	238.2	100.48	94.05	36.36	21.71
4	59.88	169	139	152	170	202	208	238.7	239.7	103.01	96.48	59.02	21.85
5	61.31	162	131	156	170	205	208	240.2	230.0	102.94	96.54	50.40	22.80
6	19.74	146	117	150	162	197	198	30.5	31.8	102.12	95.65	33.15	21.54

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)				
1	-	NOX	SOUTH	YES	
2	-	NOX	SOUTH	YES	
3	-	NOX	SOUTH	YES	
4	-	NOX	SOUTH	YES	
5	-	NOX	SOUTH	YES	
6	-	NOX	SOUTH	YES	

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HERBERL Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 04/10/08
 Approving Laboratory Official: RANDALL LANDES Date: 04/14/04

Vehicle: 2007 MCNEILUS TRUCK	NHTSA NUMBER: C70702	Transportation Research Center, Inc.
Make: MCNEILUS		10820 State Route 347
Model: 79130		East Liberty, Ohio 43319
Body Style: 11-YD. MIXER		
Front Cold Tire Pressure: 120 (psi)		Date Tested: 04/03/08
Rear Cold Tire Pressure: 105 (psi)		

DATA SHEET 21 - EMERGENCY BRAKE CONTROL LINE FAILURE DISTANCE @LLVW Control Line Failure (Continued)

Testing Conditions: INV DATA, Section 0055, 04/03/08, 14:10:36

Weather Conditions: 51°F Wind: 16 mph 127° Start Odo: 20732 End Odo: 20748

Schedule:

Initial Brake Temperature: <200°F
Initial Speed: 60 mph, or, if unattainable,
a speed multiple of 5.
6 stops with transmission in gear

Performance Requirements:

One Stop with:
Stopping Distance less than: 613.0 feet
(See Table 1 of FMVSS121, "Stopping Distance Requirements")
Lock-Up allowed no longer than 1 sec above 20 mph on 1 wheel
Vehicle Must stay in lane of 12 ft.

STOP #	INIT SPD (mph)	LEFT FRONT	RIGHT FRONT	LEFT INT	RIGHT INT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (feet)	CORRECTED DISTANCE (SAE 299) (feet)	MAX. TREADLE PRESSURE (psi)	AVG. TREADLE PRESSURE (psi)	MAX. DECEL (ft/sec²)	AVG. DECEL (ft/sec²)
		IBT (°F)	IBT (°F)	IBT (°F)	IBT (°F)	IBT (°F)	IBT (°F)			PRESSURE (psi)	PRESSURE (psi)	DECEL (ft/sec²)	DECEL (ft/sec²)
1	60.24	128	101	128	146	167	168	203.7	202.1	102.80	94.36	40.36	25.14
2	60.54	162	135	124	134	159	157	220.0	216.1	99.32	91.25	42.31	25.53
3	59.71	192	161	127	129	154	159	211.9	213.9	100.88	93.10	44.01	26.67
4	60.02	192	169	127	121	146	153	205.1	204.9	102.97	94.30	46.92	27.29
5	60.21	194	176	121	114	140	146	207.8	206.3	102.46	94.22	43.12	26.43
6	19.80	190	171	127	112	138	145	31.0	31.6	99.78	92.74	41.75	23.92

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	RI & LRX	SOUTH	YES
2	-	RI & LRX	SOUTH	YES
3	-	RI & LRX	SOUTH	YES
4	-	RI & LRX	SOUTH	YES
5	-	RI & LRX	SOUTH	YES
6	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HERBERL	Observer: NONE
Recorded Data Processed by: CHUCK JENKIKNS	Date: 04/10/08
Approving Laboratory Official: RANDALL LANDES	Date: 04/14/04

Vehicle: 2007 MCNEILUS TRUCK NHTSA NUMBER: C70702
Make: MCNEILUS
Model: 79130
Body Style: 11-YD. MIXER
Front Cold Tire Pressure: 120 (psi)
Rear Cold Tire Pressure: 105 (psi)

Transportation Research Center, Inc.
10820 State Route 347
East Liberty, Ohio 43319

Date Tested: 04/03/08

DATA SHEET 22 - PARKING BRAKE TEST (GRADE HOLDING) AT LLVW

Testing Conditions: INV DATA, Section 0066, 04/03/08, 15:28:59
Parking brake: N/A Non-service type: N/A

Service type: HAND-OPERATED

Weather Conditions: 53°F Wind: 15 mph 155° Start Odo.: 20751 End Odo.: 20751

Test Weight: Total:25660lbs Front: 0lbs Rear: 0lbs

Schedule:

Initial Brake Temperature <200°F or (Ambient temp.
if non-service brake type materials)
Loaded to GVWR with transmission in neutral
Drive onto 20% slope in forward and reverse directions.

Performance Requirements:

Up to Three Applies in each direction:
Parking brake must hold the vehicle stationary
in both directions for 5 minutes each.

NOTE: For vehicles with parking brake systems not utilizing the service brake friction elements, the friction elements of such systems are to be burnished prior to parking brake tests according to the manufacturer's published recommendation as furnished to the purchaser. If no recommendations are furnished, test the system in an unburnished condition. If recommendations are furnished, record method used.

	MAX	LEFT	RIGHT	AVG	
	SERVICE	REAR	REAR	REAR	
APPLY	FORCE	IBT	IBT	IBT	
#	(psi)	(°F)	(°F)	(°F)	
=====	=====	=====	=====	=====	=====
1	42.7	175	151	163.0	-

DRIVER VEHICLE STOP COMMENTS
(Direction of Stop (Up/Down) - Brake holds/fails)

UP HILL	20%	HOLDS
---------	-----	-------

Is brake system indicator lamp activated: YES (X) NO ()

COMMENT: Downhill test was not digitally acquired.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: RICHARD HERBERL Observer: NONE
Recorded Data Processed by: CHUCK JENKINS Date: 04/10/08
Approving Laboratory Official: RANDALL LANDES Date: 04/14/04

APPENDIX C

ENGINEER'S TEST COMMENTS

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The test vehicle was acquired from a local business and was taken out of service prior to initiating testing. Therefore, the vehicle was coated with concrete residue which made component identification difficult or impossible.

To simulate the vehicle load, the barrel of the test vehicle was filled to visual capacity with a common sand and water mixture acquired from the test vehicle's owner.

The TAG axle was not ABS controlled and locked during the majority of performance stops at GVWR. This wheel locking severely "flat-spotted" the tires to the point of allowing the steel belts to show. These tires were replaced with new, prior to returning the vehicle to its owner.

For Data Sheet 17, "Apply Time" is the time from the first movement of the service brake control until the service brake control line pressure reaches 85 psi. (Note: Accelerometer affixed to the service brake control to detect first movement.)

Per OVSC and as an indicant test, a 20 mph stop was performed at the end of each stop sequence.